Appendix 3

Updating Topographic Data and Creation of GIS Data

Appendix 3.1: Field Verification Survey Final Report

Project:	**Field Verification Survey for The Strategic Development Plan of Greater Yangon , Union of Myanmar**
Project Number:	**7101 (2977)**
Location:	**Yangon Division, Myanmar**
Report on:	**GIS Field Verification Survey and Control Point Survey**
Prepared for:	**JICA Study Team**
Report Date:	**November 2012**
Prepared by:	**Geomatic Consulting International (Myanmar) Ltd**

Geomatic Consulting International (Myanmar) Ltd
8 Awai Yar Road,
Ward 15, Yankin Township
Yangon
Tel +95 (9) 43116727

Vietnam
Unit 1706, Building H3
380 Hoang Dieu Street
District 4
Ho Chi Minh City
Tel +84 (0) 8 39 43 43 61
Fax +84 (0) 8 39 43 43 62

Cambodia
Unit 203, 10 Street 242

Phnom Penh

www.gci-int.com

Contents

ABBREVIATIONS

BM	-	Benchmark (vertical)
CM	-	Central Meridian
CP	-	Control Point (horizontal)
DTM	-	Digital Terrain Model
GCI	-	Geomatic Consulting International
GCP	-	Government Control Point
GNSS	-	Global Navigation Satellite Systems *(Includes GPS, GLONASS, SBAS, etc)*
GPS	-	Global Positioning System
JICA	-	Japanese International Cooperation Agency
MMG	-	Myanmar Government
No.	-	Number
Nr	-	Quantity
RL	-	Reduced level (elevation)
UTM	-	Universal Transverse Mercator
WGS84	-	World Geodetic Datum 1984

1.0 SUMMARY

<table>
<tr><td colspan="2">1. Project Name:
Field Verification Survey for Strategic Urban Development Plan in Greater Yangon</td><td colspan="2">2. Project Number:
7101 (2977)</td><td>3. Client:
JICA Study Team</td></tr>
<tr><td colspan="2">4. Survey Dates:
14 Oct – 18 Nov 2012</td><td colspan="2">5. Location:
Yangon Division, Myanmar</td><td>6. Site Area:
1500 km²</td></tr>
<tr><td colspan="2">7. Project Classification:
Sectors Sub-sectors
Verification GIS database</td><td colspan="3">8. Survey Classification:
Type Sub-type
Verification Database
Survey</td></tr>
<tr><td colspan="5">9. Personnel
Team Leader : Min Thu GPS Manager : Le Hong Hai Vinh
Project Manager : Wunna Tun Operation Manager:Thet Naing Oo</td></tr>
<tr><td colspan="5">10. Site Description
The study area is located within the boundary of Yangon City Development Committee (YCDC), Yangon Division, Union Of Myanmar. The study area is approximately 1500 Sqkm.</td></tr>
<tr><td colspan="5">11. Survey Methods
GNSS Static Survey the Control points for the accuracy check of the Orthorectified Satellite Imagery and Spot Height check for the accuracy of the existing contour data
GIS Data Collection Mobile Mapper 10 Verification for the field data and collecting the GIS attributes
GIS Data Compilation Arc GIS To edit and compile the GIS data base</td></tr>
<tr><td colspan="5">12. Survey Features
Control New 10 new control points has been surveyed
Existing The survey has been based from (4) existing Myanmar Survey Department control points.</td></tr>
<tr><td colspan="5">13. Other Notes:</td></tr>
</table>

2.0 INTRODUCTION

Geomatic Consulting International (Myanmar) Ltd (GCI) has been commissioned by Jica Study Team to provide field verification survey services for the strategic urban development plan of greater Yangon, located in Yangon Division, Myanmar. The Scope of Work and agreement is based on a Request for Proposal issued by JICA study team and submitted to by GCI in September 2012.

3.0 PURPOSE

The purposes of the surveys are to:

- Provide 1:10000 GIS database of Yangon City by GIS Field Verification Survey
- To Verify the accuracy of the existing 1:50000 Scale Map Contour Data by surveying (300) Spot check points
- To Verify the accuracy of the Orthorectified and Mosaicked Geoeye Imagery by surveying (10) Control Point within the project AOI

4.0 SCOPE OF WORK

The Scope of Work completed is as follows:

1. Identify the location and orthometric height of the 300 spot height accuracy check points from the existing DEM of 1:50000 maps and prepare the field survey plan, field check point survey of 300 points in the field and compare the result with the orthometric height from the 1:50000 maps
2. Horizontal Accuracy checking of the Ortho-rectified Geoeye satellite Images, 10 check points has been surveyed and compared the accuracy.
3. Field Verification Survey for the 1:10000 GIS data collection, compilation and attribute creation (Shape files)

4.1 SURVEY CONTROL

The Survey Control was established based on the Myanmar Survey Department bench marks with the Orthometric Height or Mean Sea Level. We had acquired total of (4) Control points from Myanmar Survey Department which are located within the YCDC Field Verification AOI.

4.2 GPS SURVEY

The GPS instrument we had used for this project is GNSS Survey Quality Instrument manufactured by Ashtech/Magellen. The Specification of the survey instrument is as follows.

Survey Report

Promark-800

GNSS Characteristics

■ ■120 GNSS channels
- GPS L1 C/A L1/L2 P-code, L2 C, L5, L1/L2/ L5 full wavelength carrier
- GLONASS L1 C/A and L2 C/A, L1/L2 full wavelength carrier
- GALILEO E1 and E5 (including GIOVE-A/ GIOVE-B test satellites)
- SBAS: code and carrier (WAAS/EGNOS/MSAS)

■ ■New Z-Blade technology for optimal GNSS performance
- New Ashtech GNSS centric algorithm: Fully independent GNSS satellites tracking and processing1
- Fully independent code and phase measurements
- Quick signal detection engines for fast acquisition and re-acquisition of GNSS signals
- Advanced multi-path mitigation

■ ■Up to 20 Hz real-time raw data (code and carrier) and position output

■ ■Supported data formats: ATOM (Ashtech Optimized Messaging), RTCM 2.3, RTCM 3.1, CMR, CMR+, DBEN, LRK

■ ■NMEA 0183 messages output

■ ■RTK networks: VRS, FKP, MAC

Real-Time Accuracy (RMS) 2 3

SBAS (WAAS/EGNOS/MSAS)

■ ■Horizontal < 50 cm (1.64 ft)

Real-Time DGPS position

■ ■Horizontal 25 cm (0.82 ft) + 1 ppm in typical conditions3

Real-Time Kinematic Position (fine mode)

■ ■Horizontal 10 mm (0.033 ft) + 1.0 ppm

■ ■Vertical 20 mm (0.065 ft) + 1.0 ppm

Real-Time Performance

Instant-RTK® Initialization

■ ■Independent of GPS availability when other GNSS signals are available1

■ ■Typically 2-second initialization for baselines < 20 km

■ ■99.9% reliability

RTK Initialization range

■ ■> 40 km

Post-Processing Accuracy (RMS) 2 3

Static, Rapid Static

■ ■Horizontal 5 mm (0.016 ft) + 0.5 ppm

■ ■Vertical 10 mm (0.033 ft) + 0.5 ppm

Long Static4

■ ■Horizontal 3 mm (0.009 ft) + 0.5 ppm

■ ■Vertical 6 mm (0.019 ft) + 0.5 ppm

Post-Processed Kinematic

■ ■Horizontal 10 mm (0.033 ft) + 1.0 ppm

■ ■Vertical 20 mm (0.065 ft) + 1.0 ppm

Data logging Characteristics

Recording Interval

■ ■0.05 - 999 seconds

Physical Characteristics

Size

■ ■Unit: 22.8x18.8x8.4 cm (9x7.4x3.3 in)

Weight

■ ■GNSS receiver: 1.4 kg (3.1 lb)

User Interface

■ ■Graphical OLED display

I/O Interface

- ■ ■RS232, RS422, USB, Bluetooth
- ■ ■PPS

Memory

- ■ ■128 MB internal memory (expandable through USB)
  - ■ ■Up to 400 hours of 15 sec. raw GNSS data from 18 satellites

Survey Methodology

We had used both 3G GSM Data communication for the real time kinematic survey and also static data logging for the location where GSM signal is not available for the RTK survey.

For both survey methods, we had achieved a very high accuracy result from our survey.

The Survey result and Comparism with the existing 1:50000 DEM Orthometric height data can be reviewed in the appendix-2.

4.3 FIELD VERIFICATION SURVEY

The field verification survey has been prepared and planned in the following steps.

- The Orthorectified Geoeye images has been prepared in 1 x 1 km tiles
- Ashtech Mobile Mappers are configured and tested
- The GIS attributes has been designed and loaded into Ashtech Mobile Mapper units
- GIS point attribute data has been pre-located in the GIS software and loaded into Ashtech Mobile mapper for the field survey

The daily field survey planning has been organized and total of (10) survey team has been involved in the field.

Daily field survey data has been downloaded to the computer daily and the GIS data editing staffs has been assigned to check the data and also correct the errors if found.

The final GIS data has been compiled and the attribute data has been linked with the related GIS data.

4.4 SPOT HEIGHT SURVEY

The spot height survey has been completed for the YCDC Field Verification project. First the selection of (10) photo identifiable points which can be located in the field, has been selected from the Geoeye Orthorectified Mosaicked imagery.

Then GPS RTK or Static method has been used for the surveying of these (10) check points based on the Myanmar Survey Department control datum.

The accuracy we had achieved from the survey has been reported in the Appendix-3.

4.5 REPORT

Complete a full survey report as follows:

Report:

- o Methodology, resources and results,
- o Base station coordinates, (Appendix-1)
- o GPS processing results, (Appendix-2)
- o Spot Height survey results (Appendix-3)
- o Satellite accuracy check results (Appendix-4)
- o Field Verification Photo (Appendix-5)
- o Field verification data results (ESRI Shape File)

5.0 SURVEY PARAMETERS

5.1 HORIZONTAL AND VERTICAL DATUMS

The horizontal datum associated with the project is:

- UTM Transverse Mercator Projection.

Parameters for UTM Zone 47N are:

- Central Meridian 99° 00' E
- Scale factor 0.9996
- UTM Zone 47
- False Northing 0 m
- False Easting 500 000 m
- Datum WGS84 Ellipsoid
- Projection Transverse Mercator

All coordinates and plans submitted with this report are in UTM 47 N coordinates (northings and eastings) and Mean Sea Level (MSL) (Reduced levels, RLs)

The vertical datum for the survey is MSL.

5.2 ORIGIN OF COORDINATES

The horizontal and vertical origins of coordinates for the survey were Myanmar Government control points as follows:

Table 1: Control Point Coordinates:

Pt Ref.	Latitude	Longitude	MSL RL (m)	Origin
GCP 1009	16° 45' 28.96987"	96° 15' 20.09044"	21.0175	MMG SD
GCP 1010	17° 19' 59.90954"	96° 10' 49.72507"	18.3964	MMG SD
GCP 1014	16° 42' 46.43561"	95° 55' 54.88682"	10.7507	MMG SD
GCP 1227	16° 54' 53.21588"	96° 20' 15.49232"	4.071	MMG SD

5.3 ACCURACIES

Control points ± 1 cm horizontal and vertical

6.0 METHODOLOGY

6.1 GPS SURVEY

Three survey methods were used to complete the mapping survey works, including:

- Real Time Kinematic (RTK) GNSS
- Post processed Static base line Survey

6.1.1 Real Time Kinematic (RTK) GNSS

Some part of the YCDC project area was surveyed using a 2-receiver RTK system (01 Base and 01 Rover). GSM 3G Network Data communication was used to transfer correction data from the Base to the rover units.

6.1.2 Post Processed Static base line survey

Some part of the YCDC project has very poor GSM communication so, we had decided to use the post processed Static base line survey method to complete the survey work.

6.2 FIELD VERIFICAION SURVEY

The field verification survey was planned to reach to the street by street location and identification of the GIS point of interest which were pre-located on the Geoeye Satellite images. The GIS attributes were pre-designed and configured so the field survey can use the Ashtech Mobile Mapper unit to identify and input the correct GIS data base to the unit.

Even the Ashtech Mobile mapper units can be used as a more precise GIS data collection tools, we only plan to use the GIS attribute and database collection tool in the field.

The GIS attributes can be completed in short period of time and there is no manual data entry is required after arriving back to the office.

6.3 SPOT HEIGHT ACCURACY CHECK SURVEY

Spot height accuracy check survey was mainly planned to check and existing 1:50000 DEM data and its accuracy. We had decided to use the GPS RTK or Static Survey method to survey the (300) points spread across the YCDC AOI.

6.4 DATA PROCESSING

The static data for the control point's survey has been computed and adjusted by using the Ashtech GNSS solution software. The position and height of the Myanmar Survey Department Bench Marks has been fixed and computed the network with the adjustment program.

For the check points and height accuracy check points, we had used both Static and GNSS RTK survey methods.

For the GNSS RTK Survey, we can receive the accurate horizontal and vertical precision, we are achieving from the survey, promptly in the field. This result has been checked before storing and saving the survey data in the field.

7.0 DELIVERABLES

7.1 REPORT

The Survey Report (Doc Ref. 7101 (2977)-GCI -JICA-FV01 V0.2) is submitted in hardcopy (1 Sets) and in electronic format (1 copies).

8.0 CONCLUSIONS & RECOMMENDATIONS

8.1 CONTROL POINTS

YCDC do not have its owned control survey network for the future development project. YCDC control survey network is important for the future survey activities on the ground.

YCDC should also establish its owned control network on the ground, and also connected to Myanmar Survey Department datum. Such a establishment can assure that all the future survey data will be in the same datum and also can be applied for many development projects and activities.

8.2 1:10000 GIS data update

Yangon City Development Committee shall use the most updated satellite imagery data to update the 1:10000 GIS data. Our recommendation is to update every 2 years if possible.

9.0 SIGNATURES

This project work executed for the preparation of this report and data has been carried out under my supervision.

_____

Min Thu
Team Leader
Country Director
Yangon, Myanmar

10.0 FINAL COORDINATE TABLES

Horizontal Control check Points				
Pt Ref.	**Surveyed UTM N(m)**	**Surveyed UTM E(m)**	**MSL RL (m)**	**Note**
YCDC01A	1881702.81	189996.141	5.741	
YCDC01B	1881711.01	189978.083	5.544	
YCDC02	1886394.7	194705.559	20.934	
YCDC03	1875644.75	210543.609	4.245	
YCDC04	1880545.61	197521.056	7.861	
YCDC05	1874540.43	191350.414	6.916	
YCDC06	1865907.53	189288.981	3.829	
YCDC07	1869713.03	201501.697	3.504	
YCDC08	1864904.3	206632.198	4.907	
YCDC09	1859675.73	197132.69	13.685	
YCDC10	1852170.48	208898.157	17.284	

Appendix-1:

DESCRIPTION OF GPS STATION

(1) Description

Number of Station	**GCP – 1009**	Name of Station	**Than lyin**
Area	**Bago su quarter, Than lyin Township**	**MSL**	**21.0175 m**
UTM Zone No.	**47 N**		Ellip. Height
WGS 84 Geodetic Coordinates	**Lat. N. 16° 45′ 28.96987″**	**Long. E. 96° 15′ 20.09044″**	**- 21.075 m**

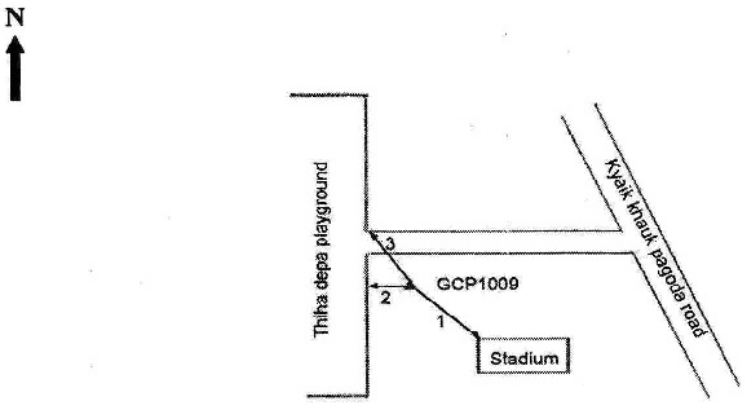
(2) Location

It is located near east entrance of Thiha Di Pa football playground at Than lyin Township, Yangon Region.

(3) Reference Marks

No.	Reference Marks	Mag. Bearing	Distance
1	N.W corner of stadium	130°	27.7 m
2	To fence	270°	4.6 m
3	To gate	335°	6.1 m

(4) Sketch



(5) Type; **Concrete pillar with centering nail**

(6) Construction

Above / Under ground level	15 cm / 75 cm
Ht. of centering mark above ground level	15 cm
Date of construction	29-12-2010

Recorded by;
Date; 15-3-2011

Checked by;
Date; 15-3-2011

DESCRIPTION OF GPS STATION

(1) Description

Number of Station	**GCP – 1014**	Name of Station	**Twen te**
Area	**Ohn pin su quarter, Twen te Township**	**MSL**	**10.7507 m**
UTM Zone No.	**46 N**		Ellip. Height
WGS 84 Geodetic Coordinates	**Lat. N. 16° 42′ 46.43561″**	**Long. E. 95° 55′ 54.88682″**	**- 32.477 m**

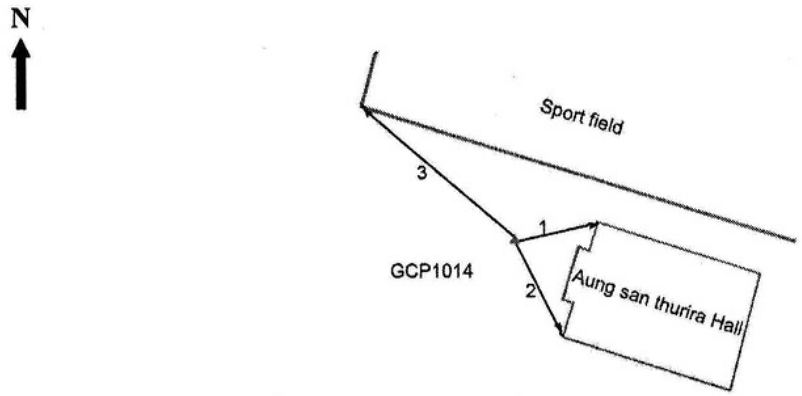
(2) Location

It is located near the entrance gate of Township football playground and infront of the Aung San Thurira stadium at Twen te Township, Yangon Region.

(3) Reference Marks

No.	Reference Marks	Mag. Bearing	Distance
1	N.W corner of Aung san thurira hall	70°	21.3 m
2	S.W corner of Aung san thurira hall	160°	25.0 m
3	S.W corner of fence of sport field	320°	32.6 m

(4) Sketch



(5) Type; **Concrete pillar with centering nail**

(6) Construction

Above / Under ground level	15 cm / 75 cm
Ht. of centering mark above ground level	15 cm
Date of construction	5-2-2011

Recorded by;
Date; 15-3-2011

Checked by;
Date; 15-3-2011

DESCRIPTION OF GPS STATION

(1) Description

Number of Station	**GCP - 1227**	Name of Station	**Tha yet pin chaung**
Area	**Tha yet pin chaung village, Dagon seikkan township**	**MSL**	**4.071 m**
UTM Zone No.	**47 N**		Ellip. Height
WGS 84 Geodetic Coordinates	**Lat. N. 16° 54′ 53.21588″**	**Long. E. 96° 20′ 15.49232″**	**-38.135 m**

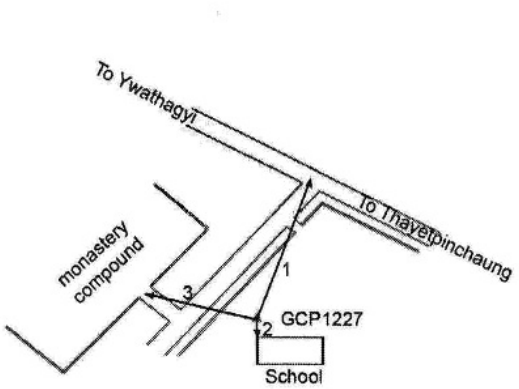
(2) Location

It is located in the sub-middle school compound at Tha yet pin chaung village, Dagon seikkan township, Yangon region.

(3) Reference Marks

No.	Reference Marks	Mag. Bearing	Distance
1	junction of road	30°	60 m
2	NW corner of school building	180°	10 m
3	NW of the monastery entrance	290°	40 m

(4) Sketch



(5) Type; **Concrete pillar with centering nail**

(6) Construction

Above / Under ground level	15 cm / 75 cm
Ht. of centering mark above ground level	15 cm
Date of construction	29 -12-2011

Recorded by;
Date;15-3-2012

Checked by;
Date; 15-3-2012

Appendix-2:

Point ID	Northing m (UTM Zone 47 WGS-84)	Easting m (UTM Zone 47 WGS-84)	MSL RL m	Lat dms	Long dms	Ellip H m
1	1878757.93	178130.21	3.2	16 58 13.37542	95 58 40.01651	-44 .54
2	1869236.48	181106.18	3.66	16 53 05.43122	96 00 25.40616	-43 .94
3	1867045.02	185469.48	4.2	16 51 56.34881	96 02 53.79490	-43 .26
4	1868647.92	182485.82	4.41	16 52 46.98318	96 01 12.27511	-43 .14
5	1877206.45	180728.12	3.44	16 57 24.25160	96 00 08.54506	-44 .19
6	1852530.11	182521.96	3.89	16 44 03.19177	96 01 21.67663	-43 .54
7	1876437.51	181773.6	3.13	16 56 59.78056	96 00 44.24242	-44 .47
8	1886101.73	186166.54	3.96	17 02 16.01639	96 03 07.66455	-43 .49
9	1855210.28	183113.18	3.52	16 45 30.58255	96 01 40.26462	-43 .93
10	1850244.93	183516.25	3.54	16 42 49.40805	96 01 56.36177	-43 .85
11	1858598.03	183441.42	3.47	16 47 20.84113	96 01 49.62633	-43 .99
12	1866564.61	184132.12	4.13	16 51 40.08453	96 02 08.90027	-43 .37
13	1864054.47	184211.76	3.62	16 50 18.54588	96 02 12.85954	-43 .86
14	1868766.98	184142.66	3.43	16 52 51.66426	96 02 08.13913	-44 .07
15	1879732.28	184738.85	4.27	16 58 48.31631	96 02 22.68865	-43 .24
16	1870959.99	185322.21	3.24	16 54 03.51090	96 02 46.84408	-44 .24
17	1863803.34	185818.58	3	16 50 11.16528	96 03 07.21083	-44 .44
18	1877653.11	186470.99	4.06	16 57 41.59251	96 03 22.24078	-43 .38
19	1873256.69	186295.7	3.95	16 55 18.62624	96 03 18.54716	-43 .5
20	1881390.4	186822.68	3.27	16 59 43.22323	96 03 32.22365	-44 .17
22	1890826.98	187269.61	7.02	17 04 50.12298	96 03 42.52576	-40 .38
23	1849421.39	186374.22	3.69	16 42 24.02164	96 03 33.15683	-43 .63
26	1847050.04	186928.3	3.65	16 41 07.21742	96 03 53.02050	-43 .64
27	1888992.1	187793.99	8.98	17 03 50.74744	96 04 01.17753	-38 .41
28	1850775.22	186731.96	3.89	16 43 08.19289	96 03 44.54748	-43 .43
29	1867502.31	187650.63	3.04	16 52 12.26755	96 04 07.18392	-44 .36
30	1887208.35	187949.22	7.22	17 02 52.85254	96 04 07.32764	-40 .18
31	1884991.87	188875.14	8.2	17 01 41.26885	96 04 39.72982	-39 .17
32	1868317.03	188191.49	4.12	16 52 39.00713	96 04 25.03172	-43 .27
33	1872896.61	188395.51	4	16 55 07.94225	96 04 29.62228	-43 .39
34	1852981.24	189186.76	3.51	16 44 21.06378	96 05 06.24901	-43 .76
35	1877300.03	188673.06	3.24	16 57 31.18731	96 04 36.78104	-44 .14
36	1863642.72	189446.62	3.99	16 50 07.69375	96 05 09.72711	-43 .34

37	1883561.80	189261.42	6.22	17 00 54.97928	96 04 53.50016	-41 .14
38	1866016.57	189064.52	3.83	16 51 24.66193	96 04 55.64879	-43 .52
39	1881142.01	190299.03	6.51	16 59 36.83797	96 05 29.76466	-40 .83
40	1853696.97	190068.93	4.45	16 44 44.74565	96 05 35.65197	-42 .81
41	1879410.21	190504.21	5.23	16 58 40.65284	96 05 37.56246	-42 .1
42	1870882.26	190558.71	5.34	16 54 03.51616	96 05 43.66053	-41 .99
43	1877557.49	190814.9	5.29	16 57 40.58817	96 05 48.98150	-42 .03
44	1872397.28	190778.6	8.45	16 54 52.86075	96 05 50.32994	-38 .87
45	1869325.68	191327.36	8.75	16 53 13.29400	96 06 10.38293	-38 .56
47	1854736.56	190939.15	3.59	16 45 18.94691	96 06 04.49471	-43 .66
48	1891320.79	191464.62	11.77	17 05 08.21367	96 06 04.03196	-35 .5
49	1874517.32	191322.15	6.39	16 56 02.02424	96 06 07.62639	-40 .92
51	1867607.81	191472.01	3.87	16 52 17.53086	96 06 16.11734	-43 .43
52	1850358.61	191737.88	3.27	16 42 57.03512	96 06 33.58651	-43 .93
53	1889882.81	192378.84	13.36	17 04 21.91992	96 06 35.64674	-33 .89
54	1865764.22	191838.38	4.09	16 51 17.78665	96 06 29.39595	-43 .19
56	1854986.63	191344.47	3.49	16 45 27.26664	96 06 18.04469	-43 .75
58	1854152.02	192316.37	3.83	16 45 00.60053	96 06 51.24051	-43 .39
60	1863812.77	192364.82	4.17	16 50 14.61235	96 06 48.12692	-43 .09
62	1888973.95	193111.63	13.33	17 03 52.73408	96 07 00.86216	-33 .9
64	1863748.28	193216.32	4.25	16 50 12.91987	96 07 16.89568	-42 .99
65	1855378.84	192593.28	3.91	16 45 40.60480	96 06 59.98050	-43 .3
66	1893550.86	192880.81	5.73	17 06 21.37541	96 06 50.77234	-41 .49
67	1864885.34	192175.89	3.75	16 50 49.38245	96 06 41.22166	-43 .51
68	1887625.76	193397.65	25.17	17 03 09.05388	96 07 11.19904	-22 .06
69	1869753.81	192994.42	16.62	16 53 28.00333	96 07 06.44715	-30 .65
70	1861850.33	193258.07	4.65	16 49 11.25333	96 07 19.23696	-42 .58
71	1860074.48	193266.36	8.7	16 48 13.53897	96 07 20.38809	-32 .28
72	1850745.62	193104.93	3.93	16 43 10.25756	96 07 19.50476	-43 .25
73	1858968.34	193289.77	4.2	16 47 37.59870	96 07 21.72019	-36 .77
74	1866024.83	193469.72	6.32	16 51 27.03142	96 07 24.32889	-40 .92
75	1858495.31	193918.14	6.63	16 47 22.52054	96 07 43.15339	-40 .57
76	1854979.52	193473.77	3.87	16 45 28.04136	96 07 29.87930	-43 .32
77	1878656.28	192728.19	20.77	16 58 17.21707	96 06 53.04839	-26 .5
78	1864109.74	193812.16	9.26	16 50 24.94974	96 07 36.82731	-37 .97
79	1860965.36	193224.44	8.93	16 48 42.47432	96 07 18.53657	-38 .3

80	1879756.32	194594.11	31.51	16 58 53.85948	96 07 55.52272	-15 .72
81	1877318.24	193086.81	18.87	16 57 33.90058	96 07 05.82399	-28 .39
82	1882488.38	194188.77	42.1	17 00 22.46190	96 07 40.47928	-5 .13
83	1875975.4	193954.62	26.46	16 56 50.66997	96 07 35.79427	-20 .79
84	1872895.32	194703.99	26.17	16 55 10.91816	96 08 02.61621	-21 .06
85	1893208.63	191265.79	6.34	17 06 09.47264	96 05 56.36281	-40 .92
86	1862585.69	194222.93	15.35	16 49 35.60949	96 07 51.43713	-31 .87
87	1874002.62	193835.79	11.6	16 55 46.49554	96 07 32.75597	-35 .65
88	1890271.57	194266.12	7.48	17 04 35.46152	96 07 39.22613	-39 .72
89	1887867.39	194395.93	13.36	17 03 17.38502	96 07 44.80823	-33 .85
90	1886417.6	194719.99	20.85	17 02 30.42003	96 07 56.47716	-26 .35
91	1857712.61	193807.77	3.79	16 46 57.02911	96 07 39.81227	-37 .18
92	1884220.9	194919.69	39.21	17 01 19.11962	96 08 04.31207	-7 .99
93	1864336.8	194707.37	15.02	16 50 32.75235	96 08 06.92936	-32 .19
94	1851358.74	194772.42	3.44	16 43 30.96728	96 08 15.44889	-43 .7
95	1860594.94	194731.7	22.78	16 48 31.14559	96 08 09.57932	-24 .41
96	1862478.87	195109.88	28.18	16 49 32.55494	96 08 21.42172	-19 .01
97	1858857.83	195188.64	18.85	16 47 34.90022	96 08 25.84470	-28 .32
98	1865815.00	195911.42	23.13	16 51 21.36332	96 08 46.84563	-24 .06
99	1848309.75	195038.03	3.87	16 41 51.99171	96 08 25.88493	-43 .25
100	1854893.55	195320.72	3.72	16 45 26.11380	96 08 32.22854	-43 .43
101	1858109.63	195373.28	16.52	16 47 10.66861	96 08 32.43874	-24 .45
102	1866932.05	195506.33	26.73	16 51 57.47953	96 08 32.62686	-20 .47
103	1860046.36	194851.53	12.94	16 48 13.37199	96 08 13.89063	-28 .03
104	1885215.05	195437.09	12	17 01 51.67715	96 08 21.29972	-35 .19
105	1881425.75	195947.75	11.76	16 59 48.76099	96 08 40.42026	-35 .43
106	1857116.81	194787.03	4.35	16 46 38.12464	96 08 13.14219	-42 .83
107	1879642.19	195426.12	24.3	16 58 50.54503	96 08 23.68010	-22 .91
108	1889116.93	195427.57	7.18	17 03 58.48938	96 08 19.04621	-39 .99
109	1854409.29	198257.56	3.43	16 45 11.74074	96 10 11.53825	-43 .66
110	1876574.91	196426.5	4.6	16 57 11.32609	96 08 58.97337	-42 .59
111	1859055.19	195908.7	26.56	16 47 41.65242	96 08 50.04511	-14 .42
112	1885354.31	196997.85	4.68	17 01 56.94385	96 09 13.96043	-42 .48
113	1874650.98	196735.4	4.36	16 56 08.93977	96 09 10.34666	-42 .84
114	1861810.21	195747.09	29.68	16 49 11.12135	96 08 43.25160	-17 .5

115	1868621.04	196920.39	4.59	16 52 53.03994	96 09 19.53608	-42 .59
116	1891201.45	197463.14	5.14	17 05 07.20723	96 09 26.80270	-41 .98
117	1860297.01	196771.49	18.88	16 48 22.41788	96 09 18.55577	-22 .1
118	1863683.49	197844.93	11.6	16 50 12.98879	96 09 53.14071	-35 .54
119	1888129.34	197094.35	5.28	17 03 27.18319	96 09 15.85464	-41 .87
120	1865235.17	197577.88	6.02	16 51 03.29803	96 09 43.37540	-41 .12
121	1856349.3	197084.77	4.22	16 46 14.25264	96 09 31.03684	-42 .9
122	1852628.99	195961.27	3.41	16 44 12.80865	96 08 54.93432	-43 .72
123	1857432.53	195654.37	10.07	16 46 48.79299	96 08 42.25203	-37 .09
124	1889906.39	196747.24	5.06	17 04 24.77585	96 09 03.24906	-42 .08
125	1886774.29	197646.12	4.73	17 02 43.40250	96 09 35.16456	-42 .41
126	1855368.91	196282.02	3.33	16 45 42.01296	96 09 04.42840	-43 .8
127	1880683.3	197998.45	4.98	16 59 25.59820	96 09 50.05252	-42 .17
128	1887899.33	198166.89	4.97	17 03 20.21486	96 09 52.20779	-42 .15
129	1856154.22	197978.22	4.18	16 46 08.32718	96 10 01.27452	-36 .79
130	1869537.03	198486.61	3.49	16 53 23.54468	96 10 11.96436	-43 .65
131	1857008.04	198005.76	3.91	16 46 36.09157	96 10 01.79222	-37 .06
132	1846709.73	197877.96	2.36	16 41 01.30414	96 10 02.42934	-44 .68
133	1858377.07	198101.23	6.62	16 47 20.63383	96 10 04.35349	-40 .49
134	1889007.83	198327.76	5.32	17 03 56.31926	96 09 57.09967	-41 .79
135	1860101.71	198094.99	21.07	16 48 16.68700	96 10 03.31090	-19 .91
136	1860870.01	198462.15	9.43	16 48 41.82951	96 10 15.33002	-37 .68
137	1861848.72	198625.37	10.29	16 49 13.71666	96 10 20.36607	-36 .82
138	1890029.84	199802.9	4.9	17 04 30.23225	96 10 46.44693	-42 .17
139	1857051.66	199004.9	4.12	16 46 37.97244	96 10 35.48187	-42 .96
140	1858092.98	198597.16	6.08	16 47 11.62993	96 10 21.22404	-41 .02
141	1853904.72	198702.62	3.49	16 44 55.54659	96 10 26.79467	-43 .59
142	1886226.26	199570.33	4.58	17 02 26.49704	96 10 40.44633	-42 .52
143	1881462.17	198316.99	4.74	16 59 51.06318	96 10 00.43165	-42 .4
144	1864682.27	199483.04	3.11	16 50 46.21423	96 10 47.94637	-44 .00
145	1878238.91	198950.13	3.62	16 58 06.59647	96 10 23.38879	-43 .52
146	1866964.92	199982.17	3.5	16 52 00.63924	96 11 03.69440	-43 .6
147	1856365.27	199450.52	4.3	16 46 15.86862	96 10 50.84620	-36 .68
148	1856081.38	200014.37	3.78	16 46 06.90143	96 11 10.00587	-37 .19
149	1862010.77	199710.81	4.49	16 49 19.48713	96 10 56.91939	-42 .6

150	1853194.89	199678.42	3.43	16 44 32.92501	96 11 00.05277	-43 .62
151	1872167.56	199697.77	3.47	16 54 49.60936	96 10 51.58177	-43 .66
152	1852410.04	199872.27	3.02	16 44 07.50366	96 11 06.96715	-44 .02
153	1859980.67	201753.46	4.09	16 48 14.44333	96 12 06.82402	-42 .95
154	1857615.44	199967.54	5.1	16 46 56.74212	96 11 07.69151	-41 .97
155	1846880.17	199323.95	2.85	16 41 07.51022	96 10 51.11203	-44 .17
156	1859761.81	200130.99	5.95	16 48 06.58241	96 11 12.17844	-41 .12
157	1874247.95	200586.5	3.55	16 55 57.64188	96 11 20.58521	-43 .56
158	1850523.9	200153.74	3.26	16 43 06.32644	96 11 17.36124	-43 .77
159	1876574.24	200567.51	3.67	16 57 13.24504	96 11 18.81983	-43 .45
160	1849015.65	200159.13	3.89	16 42 17.30476	96 11 18.26162	-43 .12
161	1860993.58	200120.14	3.85	16 48 46.61426	96 11 11.22155	-43 .23
162	1856060.87	200692.45	3.38	16 46 06.54691	96 11 32.89320	-43 .67
163	1885702.74	201314.5	5.11	17 02 10.29747	96 11 39.63069	-41 .95
164	1859532.45	200928.61	3.51	16 47 59.49499	96 11 39.20365	-43 .54
165	1869704.4	201293.3	3.46	16 53 30.28890	96 11 46.63819	-43 .63
166	1877242.06	199161.31	3.79	16 57 34.29478	96 10 31.00570	-43 .35
167	1891924.91	203019.86	6.92	17 05 33.33255	96 12 34.24242	-40 .08
168	1856841.82	201434.42	4.38	16 46 32.27170	96 11 57.55483	-42 .65
169	1849440.24	201237.08	4.74	16 42 31.59968	96 11 54.41686	-42 .25
170	1884108.15	202132.48	5.01	17 01 18.84928	96 12 08.03871	-42 .05
171	1847149.94	201818.01	3.59	16 41 17.42033	96 12 15.09458	-43 .37
172	1875595.36	198806.28	4.44	16 56 40.60660	96 10 19.81645	-42 .7
173	1868084.07	202140.57	3.62	16 52 38.01356	96 12 16.01888	-43 .45
174	1893918.25	196873.91	7.14	17 06 35.22805	96 09 05.54678	-39 .98
175	1877380.19	201255.54	3.79	16 57 39.76074	96 11 41.66684	-43 .31
176	1858775.49	201849.06	3.95	16 47 35.31406	96 12 10.62439	-43 .08
177	1862293.48	202929.48	3.56	16 49 30.15849	96 12 45.41014	-43 .47
178	1864225.23	202156.15	4.02	16 50 32.59342	96 12 18.38921	-43 .03
179	1883336.07	202515.64	4.71	17 00 53.93213	96 12 21.35622	-42 .34
180	1892375.58	190733.2	11.24	17 05 42.14038	96 05 38.78390	-36 .04
181	1860890.27	203354.31	4.21	16 48 44.74237	96 13 00.41432	-42 .79
182	1871979.4	203832.64	4.23	16 54 45.40549	96 13 11.28496	-42 .82
183	1870890.35	203568.86	4.17	16 54 09.88571	96 13 02.89813	-42 .88
184	1865530.56	202787.67	5.12	16 51 15.31204	96 12 39.08226	-41 .92

185	1867097.77	203967.14	3.79	16 52 06.79360	96 13 18.15036	-43 .23
186	1881152.55	203778.6	5.9	16 59 43.54436	96 13 05.07131	-41 .13
187	1859314.45	204054.48	4.45	16 47 53.84093	96 13 24.78891	-42 .53
188	1863274.09	204600.27	3.53	16 50 02.79592	96 13 41.33495	-43 .47
189	1852516.3	204460.23	4.28	16 44 13.05289	96 13 41.68509	-42 .65
190	1854126.86	204722.95	3.49	16 45 05.52301	96 13 49.79040	-43 .45
191	1854908.06	205671.02	5.1	16 45 31.34523	96 14 21.40920	-41 .83
192	1848882.5	204982.53	4.06	16 42 15.17224	96 14 01.00873	-36 .92
193	1868719.09	205320.08	3.88	16 53 00.11171	96 14 03.05483	-43 .12
194	1880017.99	205016.2	4.35	16 59 07.23678	96 13 47.41961	-42 .67
195	1864962.70	205188.30	3.97	16 50 57.95151	96 14 00.38383	-43 .01
196	1847875.98	205262.15	4.05	16 41 42.58134	96 14 10.91095	-42 .84
197	1874729.33	206022.78	3.77	16 56 15.79309	96 14 23.93294	-43 .24
198	1861364.30	205185.90	3.52	16 49 00.98532	96 14 02.00244	-43 .45
199	1849803.82	205811.12	5.05	16 42 45.49361	96 14 28.52552	-35 .93
200	1862371.32	205546.18	3.43	16 49 33.88190	96 14 13.68668	-43 .54
201	1851741.31	206740.32	4.11	16 43 48.89079	96 14 58.96488	-42 .76
202	1853727.32	206612.12	10.96	16 44 53.38944	96 14 53.71271	-35 .93
203	1848278.25	206104.31	3.36	16 41 56.03647	96 14 39.12720	-43 .51
204	1854434.87	206673	6.11	16 45 16.41583	96 14 55.43586	-40 .78
205	1857825.4	206330.95	4.38	16 47 06.47196	96 14 42.30780	-42 .55
206	1864700.89	206582.82	4.46	16 50 50.07482	96 14 47.57867	-42 .49
207	1855682.1	206979.23	22.37	16 45 57.09551	96 15 05.18488	-24 .53
208	1881927.45	207316.83	4.47	17 00 10.35604	96 15 04.22706	-42 .49
209	1857901.91	207816.22	4.7	16 47 09.62835	96 15 32.39038	-42 .18
210	1881205.48	206774.29	3.81	16 59 46.64098	96 14 46.24183	-43 .17
211	1875407.52	201490.38	3.48	16 56 35.75157	96 11 50.54898	-43 .62
212	1877711.67	205961.53	4.31	16 57 52.70451	96 14 20.44826	-42 .69
213	1869394.55	206959.06	3.7	16 53 22.81301	96 14 58.06977	-43 .28
214	1861232.42	206877.62	3.98	16 48 57.46486	96 14 59.15774	-42 .95
215	1866890.17	207151.43	4.13	16 52 01.49512	96 15 05.74281	-42 .83
216	1882826.77	207383.55	3.82	17 00 39.61888	96 15 06.05429	-43 .14
217	1871256.02	207020.32	3.85	16 54 23.34804	96 14 59.26040	-43 .12
218	1853548.31	206914.97	17.03	16 44 47.70670	96 15 04.01348	-29 .85
219	1852254.32	207095.63	4.45	16 44 05.72626	96 15 10.71175	-42 .42

220	1846359.5	207474.06	6.91	16 40 54.28006	96 15 26.21696	-39 .91
221	1856505.77	206848.6	11.52	16 46 23.81045	96 15 00.39240	-35 .39
222	1854529.93	207650.97	22.75	16 45 19.94557	96 15 28.38660	-24 .13
223	1850260.69	207967.88	5.62	16 43 01.31278	96 15 41.06272	-41 .22
224	1883254.28	196091.6	10.63	17 00 48.25974	96 08 44.37853	-36 .55
225	1865645.8	208155.92	3.94	16 51 21.50045	96 15 40.23540	-42 .99
226	1877396.62	206687.06	5.46	16 57 42.79542	96 14 45.10248	-41 .53
227	1868201.97	208317.86	4.32	16 52 44.66278	96 15 44.50484	-42 .62
228	1844350.68	208048.62	5.17	16 39 49.23787	96 15 46.52351	-41 .63
229	1877134	208307.34	4.18	16 57 34.99609	96 15 39.95128	-42 .78
230	1860738.78	208801.03	4.31	16 48 42.28500	96 16 04.30132	-42 .57
231	1878334.96	206876.65	4.35	16 58 13.38255	96 14 51.06121	-42 .64
232	1871125.81	198028.51	4.24	16 54 14.97030	96 09 55.72714	-42 .92
233	1852727.92	208754.42	25.05	16 44 21.86374	96 16 06.45146	-21 .78
234	1838649.6	208807.33	4.29	16 36 44.25397	96 16 14.73346	-42 .48
235	1864440.32	208940.69	4.21	16 50 42.66874	96 16 07.28937	-42 .69
236	1848525.17	208640.8	4.51	16 42 05.19841	96 16 04.56470	-42 .29
237	1863149.33	212283.69	4.24	16 50 02.19697	96 18 00.72809	-42 .57
238	1847368.92	209183.49	4.48	16 41 27.85475	96 16 23.40315	-42 .3
239	1857199.65	209818.64	3.01	16 46 47.69746	96 16 40.28554	-43 .82
240	1841627.73	209149.44	4.52	16 38 21.21411	96 16 24.89903	-42 .25
241	1851657.08	209533.75	33.58	16 43 47.40263	96 16 33.23787	-13 .22
242	1877562.1	208682.04	3.71	16 57 49.08158	96 15 52.40534	-43 .23
243	1878394.63	210260.92	4.16	16 58 16.85690	96 16 45.34308	-42 .75
244	1869772.23	210227.87	4.82	16 53 36.56482	96 16 48.25646	-42 .08
245	1862771.23	210909.31	4.69	16 49 49.29477	96 17 14.51326	-42 .16
246	1865945.14	210291.02	3.63	16 51 32.18993	96 16 52.17011	-43 .25
247	1847861.89	212674.84	12.77	16 41 45.42295	96 18 20.93481	-28 .21
248	1874835.14	212327.63	4.49	16 56 22.08019	96 17 56.80594	-42 .37
249	1879823.62	212540.84	5.01	16 59 04.33181	96 18 01.68893	-41 .84
250	1872821.98	205112.26	3.77	16 55 13.37950	96 13 54.09149	-43 .25
251	1857435.35	210585.52	4.16	16 46 55.70082	96 17 06.05384	-42 .65
252	1856299.13	210646.34	4.31	16 46 18.79351	96 17 08.63075	-42 .49
253	1863343.44	207462.40	4.33	16 50 06.34855	96 15 17.90486	-42 .6
254	1850784.56	210592.28	15.7	16 43 19.51042	96 17 09.34839	-25 .28

255	1845582.71	210721.48	5.6	16 40 30.47279	96 17 16.09525	-41 .14
256	1860032.48	210935.08	4.29	16 48 20.27970	96 17 16.64989	-42 .54
257	1861746.91	209440.25	4.15	16 49 15.34143	96 16 25.40569	-42 .73
258	1851907.07	210543.61	3.87	16 43 55.97759	96 17 07.19000	-42 .91
259	1854826.28	211035.62	3.98	16 45 31.08932	96 17 22.44478	-42 .81
260	1853454.93	211444.31	4.61	16 44 46.69248	96 17 36.86437	-36 .37
261	1867379.91	209316.67	4.96	16 52 18.39111	96 16 18.60934	-41 .94
262	1843323.3	211334.8	9.19	16 39 17.29715	96 17 37.81248	-37 .53
263	1875691.17	213202.67	4.28	16 56 50.29677	96 18 25.96196	-42 .56
264	1840521.5	211997.8	3	16 37 46.51006	96 18 01.44615	-43 .7
265	1883464.17	212219.47	5.44	17 01 02.52730	96 17 49.13555	-41 .41
266	1874727.3	209843.68	3.92	16 56 17.46018	96 16 32.96874	-43 .00
267	1848889.47	211815.84	24.92	16 42 18.44838	96 17 51.49136	-16 .05
268	1852907.55	212547.55	3.36	16 44 29.38655	96 18 14.33604	-43 .38
269	1864810.59	211563.46	3.38	16 50 55.87850	96 17 35.64956	-43 .45
270	1861766.32	212202.28	2.36	16 49 17.20372	96 17 58.61756	-44 .45
271	1867968.48	209838.72	2.98	16 52 37.75766	96 16 35.95885	-43 .92
272	1881964.99	212511	5.06	17 00 13.92602	96 17 59.68386	-41 .79
273	1868721.54	212957.39	4.42	16 53 03.62952	96 18 20.90072	-42 .41
274	1851715.57	212327.3	4.83	16 43 50.54152	96 18 07.45091	-41 .9
275	1846740.29	213012.1	19.32	16 41 09.11074	96 18 32.82112	-21 .65
276	1878064.16	212315.9	5.25	16 58 07.03773	96 17 54.90934	-41 .61
277	1854771.52	221267.08	4.12	16 45 33.76925	96 23 07.69223	-42 .39
278	1874600.19	214116.04	4.61	16 56 15.23930	96 18 57.31344	-42 .2
279	1873224.14	208548.6	4.45	16 55 28.01468	96 15 49.93908	-42 .5
280	1849306.5	213544.82	5.02	16 42 32.76497	96 18 49.62155	-35 .95
281	1884687.79	212706.77	4.89	17 01 42.52118	96 18 05.02910	-41 .94
282	1844116.49	214249.83	21.49	16 39 44.35915	96 19 15.75488	-25 .16
283	1845986.29	213901.18	12.62	16 40 44.98960	96 19 03.14962	-34 .05
284	1873724.18	214869.52	4.42	16 55 47.09709	96 19 23.16326	-42 .38
285	1870370.05	208162.66	3.62	16 53 55.06701	96 15 38.24790	-43 .32
286	1854330.34	215401.48	3.82	16 45 16.89029	96 19 49.97590	-42 .84
287	1841446.39	214685.76	19.17	16 38 17.74982	96 19 31.66150	-27 .47
288	1872743.75	197797.89	4.30	16 55 07.44950	96 09 47.15362	-42 .87
289	1863465.38	215402.92	4.69	16 50 13.84823	96 19 45.87010	-42 .04

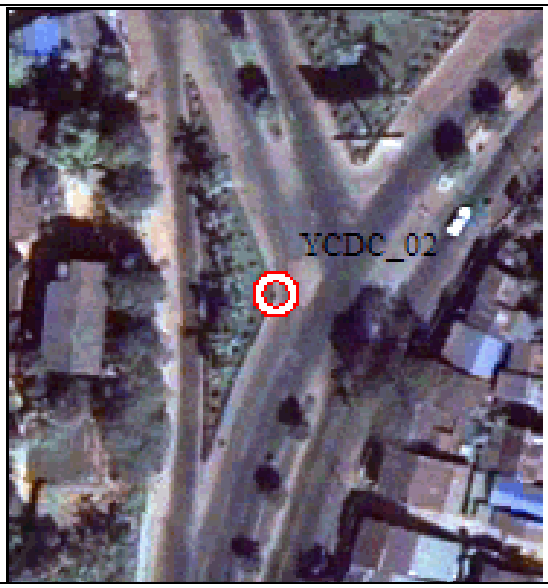
290	1869921.11	215275.59	4.77	16 53 43.64994	96 19 38.62079	-42 .01
291	1868652.01	199428.1	3.27	16 52 55.21776	96 10 44.17656	-43 .86
292	1872768.04	215519.69	4.34	16 55 16.30292	96 19 45.55877	-42 .43
293	1878529.68	196251.71	14.31	16 58 14.77749	96 08 52.11097	-32 .89
294	1863771.21	217039.01	3.62	16 50 24.50629	96 20 40.95778	-43 .08
295	1865024.25	219423.71	4.93	16 51 06.27773	96 22 00.89244	-41 .71
296	1869551.48	217818.56	3.71	16 53 32.75071	96 21 04.65326	-43 .00
297	1855410.74	217828.34	3.7	16 45 53.06790	96 21 11.37406	-42 .9
298	1858494.81	217439.56	4.14	16 47 33.15659	96 20 56.86455	-42 .51
299	1868522.78	218480.23	4.56	16 52 59.59844	96 21 27.46064	-42 .12
300	1871800.52	192204.64	12.41	16 54 34.14780	96 06 38.77200	-34 .88
301	1870806.99	193646.44	24.27	16 54 02.54278	96 07 27.93943	-22 .98
302	1871000.68	195170.63	26.27	16 54 09.55985	96 08 19.30188	-20 .95
303	1869737.92	195757.30	27.87	16 53 28.79411	96 08 39.72672	-19 .33
304	1870064.96	197120.66	4.36	16 53 40.06479	96 09 25.59344	-42 .82
305	1872047.83	196500.11	4.34	16 54 44.22101	96 09 03.67515	-42 .85
306	1871584.44	198762.16	4.06	16 54 30.21982	96 10 20.27441	-43 .09
307	1868613.86	193736.45	13.33	16 52 51.30553	96 07 32.05828	-33 .92
308	1866921.32	198287.31	4.20	16 51 58.43363	96 10 06.50428	-42 .94
309	1861764.55	197830.41	10.30	16 49 10.61098	96 09 53.57926	-36 .83
310	1860328.05	205415.39	5.06	16 48 27.40625	96 14 10.23557	-41 .9

Appendix-3:

<table>
<tr><td colspan="6">Description of Control Point</td></tr>
<tr><td>Point No.</td><td>YCDC-01A</td><td>Reference Map</td><td>Satellite Image</td><td>Operated by</td><td>Kaung</td></tr>
<tr><td></td><td></td><td>Date of Observation</td><td>1-Nov 2012</td><td>Inspected by</td><td>Vinh</td></tr>
<tr><td colspan="2" rowspan="3"></td><td colspan="2">UTM ZONE 47 (WGS-84)</td><td>MSL RL (m)</td><td>Ellip Height (m)</td></tr>
<tr><td>Easting (X)</td><td>Northing (Y)</td><td>5.741</td><td>-41.599</td></tr>
<tr><td>189996.141</td><td>1881702.81</td><td colspan="2"></td></tr>
<tr><td colspan="2">GCS Coordinate</td><td>16 59 55.17553</td><td>96 05 18.63871</td><td colspan="2"></td></tr>
<tr><td colspan="3">Satellite Image</td><td colspan="3">Satellite Image</td></tr>
<tr><td colspan="3">  </td><td colspan="3"> 
</td></tr>
<tr><td colspan="3">Surrounding Site Photo</td><td colspan="3">Surrounding Site Photo</td></tr>
<tr><td colspan="3">  </td><td colspan="3">  </td></tr>
</table>

Description of Control Point					
Point No.	YCDC-01B	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	1-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	5.544	-41.796
		189978.083	1881711.01		
GCS Coordinate		16 59 55.17553	96 05 18.63871		

Satellite Image	Satellite Image
	
Surrounding Site Photo	**Surrounding Site Photo**
	

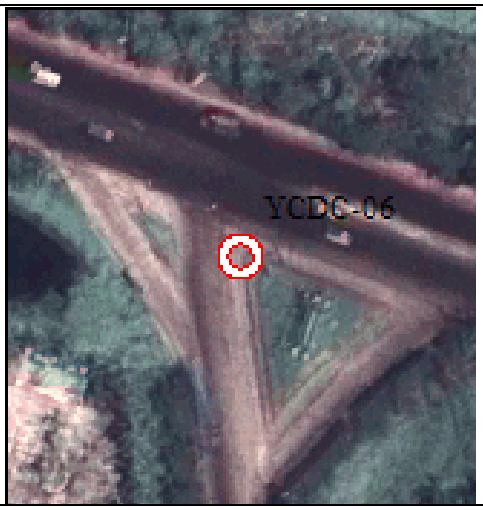
<table>
<tr><td colspan="6">Description of Control Point</td></tr>
<tr><td>Point No.</td><td>YCDC-02</td><td>Reference Map</td><td>Satellite Image</td><td>Operated by</td><td>Kaung</td></tr>
<tr><td></td><td></td><td>Date of Observation</td><td>1-Nov 2012</td><td>Inspected by</td><td>Vinh</td></tr>
<tr><td colspan="2" rowspan="3"></td><td colspan="2">UTM ZONE 47 (WGS-84)</td><td>MSL RL (m)</td><td>Ellip Height (m)</td></tr>
<tr><td>Easting (X)</td><td>Northing (Y)</td><td>20.934</td><td>-26.27</td></tr>
<tr><td>194705.559</td><td>1886394.7</td><td colspan="2"></td></tr>
<tr><td colspan="2">GCS Coordinate</td><td>17 02 29.66870</td><td>96 07 56.00083</td><td colspan="2"></td></tr>
<tr><td colspan="3">Satellite Image</td><td colspan="3">Satellite Image</td></tr>
<tr><td colspan="3">  </td><td colspan="3"> 
</td></tr>
<tr><td colspan="3">Surrounding Site Photo</td><td colspan="3">Surrounding Site Photo</td></tr>
<tr><td colspan="3">  </td><td colspan="3">  </td></tr>
</table>

Description of Control Point					
Point No.	YCDC-03	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	2-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	4.245	-42.658
		210543.609	1875644.75		
GCS Coordinate		16 56 47.59764	96 16 56.17782		
			Satellite Image		
					
Surrounding Site Photo			Surrounding Site Photo		
					

Description of Control Point					
Point No.	YCDC-04	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	1-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	7.861	-39.301
		197521.056	1880545.61		
GCS Coordinate		16 59 20.89842	96 09 33.99500		

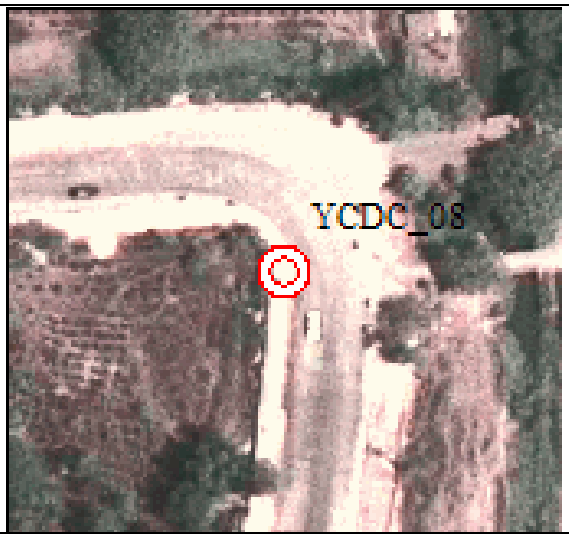
	Satellite Image
	
Surrounding Site Photo	Surrounding Site Photo
	

Description of Control Point					
Point No.	YCDC-05	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	1-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	6.916	-40.395
		191350.414	1874540.43		
GCS Coordinate		16 56 02.78872	96 06 08.56927		
			Satellite Image		
					
Surrounding Site Photo			Surrounding Site Photo		
					

Description of Control Point					
Point No.	YCDC-06	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	2-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	3.829	-43.518
		189288.981	1865907.53		
GCS Coordinate		16 51 21.22569	96 05 03.27918		
			Satellite Image		
					
Surrounding Site Photo			Surrounding Site Photo		
					

Description of Control Point					
Point No.	YCDC-07	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	2-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	3.504	-43.584
		201501.697	1869713.03		
GCS Coordinate		16 53 30.66571	96 11 53.66979		
			Satellite Image		
					
Surrounding Site Photo			Surrounding Site Photo		
					

Description of Control Point					
Point No.	YCDC-08	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	2-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	4.907	-42.049
		206632.198	1864904.3		
GCS Coordinate		16 50 56.70905	96 14 49.14961		

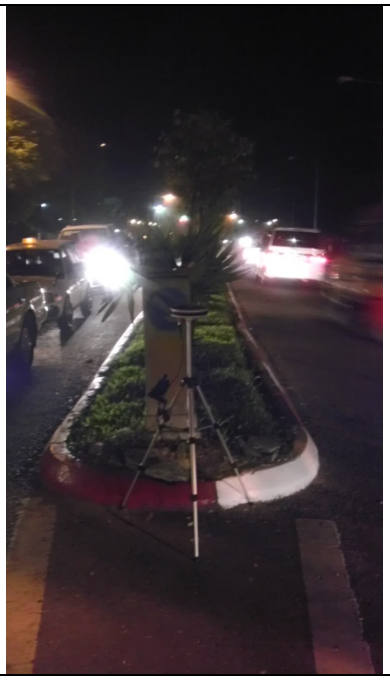
	Satellite Image
	
Surrounding Site Photo	Surrounding Site Photo
	

Description of Control Point					
Point No.	YCDC-09	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	2-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	13.685	-33.448
		197132.69	1859675.73		
GCS Coordinate		16 48 02.39319	96 09 31.04502		

Satellite Image

Surrounding Site Photo

Surrounding Site Photo



Description of Control Point					
Point No.	YCDC-10	Reference Map	Satellite Image	Operated by	Kaung
		Date of Observation	2-Nov 2012	Inspected by	Vinh
		UTM ZONE 47 (WGS-84)		MSL RL (m)	Ellip Height (m)
		Easting (X)	Northing (Y)	17.284	-29.54
		208898.157	1852170.48		
GCS Coordinate		16 44 03.80795	96 16 11.55867		
Satellite Image			Satellite Image		
					
Surrounding Site Photo			Surrounding Site Photo		

Appendix-4:

Projection: UTM Zone 47

Coordinates System: WGS 84

Point ID	GPS		Satellite Image		Shift (m)	Remarks
	Northing (m)	Easting (m)	Northing (m)	Easting (m)		
YCDC-01A	1881702.810	189996.141	1881710.487	189977.370	0.8	
YCDC-01B	1881711.011	189978.083	1881702.255	189995.842	0.6	
YCDC-02	1886394.696	194705.559	1886395.614	194705.642	0.9	
YCDC-03	1875644.754	210543.609	1875643.033	210544.616	1.9	Feature Change
YCDC-04	1880545.613	197521.056	1880544.846	197521.032	0.8	
YCDC-05	1874540.426	191350.414	1874539.190	191353.174	3.0	Feature Change
YCDC-06	1865907.528	189288.981	1865907.980	189289.876	1.0	
YCDC-07	1869713.026	201501.697	1869712.870	201500.794	0.9	
YCDC-08	1864904.299	206632.198	1864904.345	206633.451	1.2	
YCDC-09	1859675.728	197132.690	1859674.939	197131.776	1.2	
YCDC-10	1852170.482	208898.157	1852167.956	208898.399	2.5	Feature Change

Appendix-5

Some Photos of Field verification..

Data Collector (Mobile Mapper 10)

Collecting the data

Taking the photo of collecting data

Downloading And Processing the data at Office

Appendix 3.2: A List of Features for Updating 50k GIS database

Appendix 3.2: A List of Features for Updating 50k GIS Database

No.	Prime Classification	Secondary Classification	Data Type	2012 GIS data file name
1	Administration Boundary	District	Polygon	AdminiBoundary_Polygon_2012.shp
		Division	Polygon	AdminiBoundary_Polygon_2012.shp
		Township	Polygon	AdminiBoundary_Polygon_2012.shp
2	Road	1001_Road_Highway	Line	Road_Polyline_2012.shp
		1002_Road_Main_road	Line	Road_Polyline_2012.shp
		1003_Road_Secondary_road	Line	Road_Polyline_2012.shp
		1004_Road_Other_road	Line	Road_Polyline_2012.shp
		1005_Road_Cart_track	Line	Road_Polyline_2012.shp
		1006_Road_Pack_track	Line	Road_Polyline_2012.shp
		1007_Road_Foot_Path	Line	Road_Polyline_2012.shp
		1008_Road_in_built_up_area	Line	Road_Polyline_2012.shp
3	Road Bridge	10091_Motor_bridge Minimum Size	Point	RoadBridge_Point_2012.shp
		10092_Motor_bridge Middle Size	Point	RoadBridge_Point_2012.shp
		10093_Motor_bridge Big Size	Point	RoadBridge_Point_2012.shp
		10094_Motor_bridge Actual Size	Point	RoadBridge_Point_2012.shp
4	Railway	1101_Single_railway	Line	Railway_Polyline_2012.shp
		1102_Multiple_railway	Line	Railway_Polyline_2012.shp
5	Railway Station	1105_Railway_station_symbol	Point	RailwayStation_Point_2012.shp
6	Public Facility	2105_Pagoda_or_stupa_Symbol	Point	PublicFacility_Point_2012.shp
		2106_Monastery_Symbol	Point	PublicFacility_Point_2012.shp
		2108_Budda_image_Symbol	Point	PublicFacility_Point_2012.shp
		2109_HinduTemple_symbol	Point	PublicFacility_Point_2012.shp
		2110_Monument_Symbol	Point	PublicFacility_Point_2012.shp
		2111_Church_Symbol	Point	PublicFacility_Point_2012.shp
		2113_Mosque_Symbol	Point	PublicFacility_Point_2012.shp
		2114_Factory_Symbol	Point	PublicFacility_Point_2012.shp
		2115_School_Symbol	Point	PublicFacility_Point_2012.shp
		2116_Rest_house_symbol	Point	PublicFacility_Point_2012.shp
		2117_Hospital_Symbol	Point	PublicFacility_Point_2012.shp
		2118_Police_station_Symbol	Point	PublicFacility_Point_2012.shp
		2119_Post_office_symbol	Point	PublicFacility_Point_2012.shp
		2120_Light_house_Symbol	Point	PublicFacility_Point_2012.shp
		2122_Oil_well_Symbol	Point	PublicFacility_Point_2012.shp
		2123_Antenna_mast_Symbol	Point	PublicFacility_Point_2012.shp
		2125C_Cemetery	Point	PublicFacility_Point_2012.shp
		2127_Hotel_Symbol	Point	PublicFacility_Point_2012.shp
7	Land-use Map Data	41_Transportation_facilities_area	Polygon	LanduseMapData_Polygon_2012.shp
		12_Residential_area_Low_rise	Polygon	LanduseMapData_Polygon_2012.shp
		21_Education_and_Culture_facilities_area	Polygon	LanduseMapData_Polygon_2012.shp
		22_Health_and_Welfare_facilities_area	Polygon	LanduseMapData_Polygon_2012.shp
		23_Commercial_area	Polygon	LanduseMapData_Polygon_2012.shp
		31_Business_area	Polygon	LanduseMapData_Polygon_2012.shp
		41_Transportation_facilities_area	Polygon	LanduseMapData_Polygon_2012.shp
		51_Industrial_area	Polygon	LanduseMapData_Polygon_2012.shp
		61_Cattle_farm	Polygon	LanduseMapData_Polygon_2012.shp
		62_Cultivated_land	Polygon	LanduseMapData_Polygon_2012.shp
		63_Plantation	Polygon	LanduseMapData_Polygon_2012.shp
		71_Grass_land	Polygon	LanduseMapData_Polygon_2012.shp
		72_Scattered_tree	Polygon	LanduseMapData_Polygon_2012.shp
		73_Sparse_forest	Polygon	LanduseMapData_Polygon_2012.shp
		74_Dense_forest	Polygon	LanduseMapData_Polygon_2012.shp

		81_Mangrove	Polygon	LanduseMapData_Polygon_2012.shp
		82_Swamp_area	Polygon	LanduseMapData_Polygon_2012.shp
		83_Water_surface	Polygon	LanduseMapData_Polygon_2012.shp
		91_Green_space	Polygon	LanduseMapData_Polygon_2012.shp
		92_Playground	Polygon	LanduseMapData_Polygon_2012.shp
		93_Under_developing_area	Polygon	LanduseMapData_Polygon_2012.shp
		94_Open_space	Polygon	LanduseMapData_Polygon_2012.shp
8	Pipe Line	20031_Pipe_line_oil	Line	PipeLine_Polyline_2012.shp
		20032_Pipe_line_water	Line	PipeLine_Polyline_2012.shp
9	Power Line	2001_Transmission_line	Line	PowerLine_Polyline_2012.shp
10	Transformer Station	2002_Transmissionstation_Symbol	Point	TransformerStation_point_2012.shp
11	Contour Line	7001_Index_contour	Line	ContourLine_Polyline_2012.shp
		7002_Intermediate_contour	Line	ContourLine_Polyline_2012.shp
		7003_Supplementary_contour	Line	ContourLine_Polyline_2012.shp
12	Hydro Feature	60051_Canal(Single)	Line	HydroFeature_Polyline_2012.shp
		6008_Stream	Line	HydroFeature_Polyline_2012.shp
		60091_River(Single)	Line	HydroFeature_Polyline_2012.shp
		60092_River(2_line)	Line	HydroFeature_Polyline_2012.shp
13	Villages Point	Village Name	Point (text)	Villages_Point_2012.shp

Source: JICA Study Team

Appendix 3.3: A List of Feature Generation 1:10,000 GIS Database

Appendix 3.3: A List of Feature Generation 1:10,000 GIS Database

No.	Prime Classification	Secondary Classification		Detail		Type	Attribute 1	Attribute 2	Attribute 3	Layer 1	Layer 2
01	Geodetic Control Network	1	Geodetic points	01	Existing GPS point	Point	name			101101	101101-Existing GPS point
			Geodetic points	02	Benchmark	Point	name			101102	101102-Benchmark
02	Hypsography	1	Contour Lines	01	Index Contour	Line	elevation			102101	102101-Index Contour
				02	Intermediate contour	Line	elevation			102102	102102-Intermediate contour
				03	Supplementary Contour	Line	elevation			102103	102103-Supplementary Contour
03	Transportation	1	Roads	01	Highway	Line (center line)	name	number of lane		103101	103101-Highway
				02	Primary Arterial Roads (major roads)	Line (center line)	name	number of lane		103102	103102-Primary Arterial Roads (major roads)
				03	Secondary Arterial Roads (minor roads)	Line (center line)	name	number of lane		103103	103103-Secondary Arterial Roads (minor roads)
				04	Other roads	Line (center line)	name	number of lane		103104	103104-Other roads
				05	Bridges	Line (center line)	name	number of lane	Material (ex. Concrete)	103105	103105-Bridges
				06	Embankment	Line	name			103106	103106-Embankment
				07	Intersection	Point	RA or non-RA			103107	103107-Intersection
		2	Public Transport	01	Bus Stops	Point	name			103201	103201-Bus Stops
				02	Bus Terminals	Polygon	name			103202	103202-Bus Terminals
				03	Ferry Terminals building	Point	name			103203	103203-Ferry Terminals
				04	Ferry Terminals	Polygon	name			103204	103204-Ferry Terminals
				05	Jetty	Line (center line)	name			103205	103205-Jetty
				06	Jetty	Polygon				103206	103206-Jetty
				07	Railway (rail track)	Line (center line)				103207	103207-Railway (rail track)
				08	Rail station building	Point	name			103208	103208-Rail station building
				09	Rail station area	Polygon				103209	103209-Rail station area

NIPPON KOEI CO., LTD., NJS CONSULTANTS CO., LTD.
YACHIYO ENGINEERING CO., LTD., INTERNATIONAL DEVELOPMENT CENTER OF JAPAN,
ASIA AIR SURVEY CO., LTD., and ALMEC CORPORATION

				10	Airport passenger terminal building	Point	name			103210	103210-Airport passenger terminal building
				11	Airport buildings	Point	name			103211	103211-Airport buildings
				12	Airport area	Polygon	name			103212	103212-Airport area
		3	Freight Transport	01	Truck Terminal location	Point (at gate)	name			103301	103301-Truck Terminal location
				02	Truck Terminal buildings	Polygon	name			103302	103302-Truck Terminal buildings
				03	Truck Terminal area	Polygon				103303	103303-Truck Terminal area
				04	Port location	Point (at gate)	name			103304	103304-Port location
				05	Port buildings	Point	name			103305	103305-Port buildings
				06	Port area	Polygon				103306	103306-Port area
				07	ICDs	Point (at gate)	name			103307	103307-ICDs
				08	ICDs	Polygon				103308	103308-ICDs
04	Boundaries	1	Administrative Boundaries	01	Provincial boundary	Polygon	name			104101	104101-Provincial boundary
				02	District boundary	Polygon	name			104102	104102-District boundary
				03	Town boundary	Polygon	name			104103	104103-Town boundary
				04	Ward Block	Polygon	name			104104	104104-Ward Block
05	Public services	1	Governmental units	01	Government Office building	Point	name			105101	105101-Government Office building
				02	Government Office area	Polygon				105102	105102-Governemnt Office area
		2	Public facilities	01	Fire station building	Point	name			105201	105201-Fire station building
				02	Fire station area	Polygon				105202	105202-Fire station area
				03	Hospital building	Point	name			105203	105203-Hospital building
				04	Hospital area	Polygon				105204	105204-Hospital area
				05	School building	Point	name			105205	105205-School building
				06	School area	Polygon				105206	105206-School area
				07	University building	Point	name			105207	105207-University building
				08	University area	Polygon				105208	105208-University area
				09	Mosque building	Point	name			105209	105209-Mosque building
				10	Mosque area	Polygon				105210	105210-Mosque area
				11	Pagoda building	Point	name			105211	105211-Pagoda building
				12	Pagoda area	Polygon				105212	105212-Pagoda area
				13	Temple building	Point	name			105213	105213-Temple building
				14	Temple area	Polygon				105214	105214-Temple area
				15	Park	Polygon	name			105215	105215-Park

				16	Military Facilities building	Point	name			105216	105216-Military Facilities building
				17	Military Facilities area	Polygon				105217	105217-Military Facilities area
				18	Sports Facilities building	Point	name			105218	105218-Sports Facilities building
				19	Sports Facilities area	Polygon				105219	105219-Sports Facilities area
				20	Church building	Point	name			105220	105220-Hospital building
				21	Church area	Polygon				105221	105221-Hospital area
06	Building	1	Residential	01	Detached houses	Point	name			106101	106101-Detached houses
				02	Detached houses area	Polygon				106102	106102-Detached houses area
				03	Apartment / Condominium building	Point	name			106103	106103-Apartment / Condominium building
				04	Apartment / Condominium area	Polygon				106104	106104-Apartment / Condominium area
		2	Commercial	01	Shopping centre building	Point	name			106201	106201-Shopping centre building
				02	Shopping centre area	Polygon				106202	106202-Shopping centre area
				03	Market building	Point	name			106203	106203-Market building
				04	Market area	Polygon				106204	106204-Market area
				05	Office building	Point	name			106205	106205-Office building
				06	Office building area	Polygon				106206	106206-Office building area
				07	Shop-house building	Point	name			106207	106207-Shophouse building
				08	Shop-house area	Polygon				106208	106208-Shophouse area
		3	Industries	01	Heavy Industry building	Point	name			106301	106301-Heavey Industry building
				02	Heavy Industry area	Polygon				106302	106302-Heavey Industry area
				03	Hazardous Industries building	Point	name			106303	106303-Hazardous Industries building
				04	Hazardous Industries area	Polygon				106304	106304-Hazardous Industries area
				05	Light Industries building	Point	name			106305	106305-Light Industries building
				06	Light Industries area	Polygon				106306	106306-Light Industries area
07	Utilities	1	Utilities	01	Power Plant building	Point	name			107101	107101-Power Plant building
				02	Power Plant area	Polygon				107102	107102-Power Plant area
				03	Power Transmission Line (HV)	Line				107103	107103-Power Transmission Line (HV)
				04	Power Transmission Tower (HV)	Point				107104	107104-Power Transmission Tower (HV)

				05	Power substation building	Point	name			107105	107105-Power substation building
				06	Power substation area	Polygon				107106	107106-Power substation area
				07	Telecom facilities/building	Point	name			107107	107107-Telecom facilities/building
				08	Telecom facilities area	Polygon				107108	107108-Telecom facilities area
				09	Waterworks building	Point	name			107109	107109-Waterworks building
				10	Water works area	Polygon				107110	107110-Wataerworks area
				11	Sewage (treatment) plant building	Point	name			107111	107111-Sewage (treatment) plant building
				12	Sewage (treatment) plant area	Polygon				107112	107112-Sewage (treatment) plant area
				13	Solid waste disposal facilities Building	Point	name			107113	107113-Solid waste disposal facilities Building
				14	Solid waste disposal facilities area	Polygon	name			107114	107114-Solid waste disposal facilities area
				15	Temporary Waste Tank	Point	name			107115	107115-Temporary Waste Tank
				16	Big Containers	Point	name			107116	107116-Big Containers
08	Vegetation	1	Vegetation	01	Cultivated land	Polygon				108101	108101-Cultivated land
				02	Paddy field	Polygon				108102	108102-Paddy field
				03	others	Polygon				108103	108103-others
09	Hydrograph	1	River	01	River (more than 10m width)	Polygon	name			109101	109101-River (more than 10m width)
				02	River	Line (center line)	name			109102	109102-River
				03	Canal (more than 10m width)	Polygon	name			109103	109103-Canal (more than 10m width)
				04	Canal	Line (center line)	name			109104	109104-Canal
		2	Water bodies	01	Lake and pond	Polygon	name			109201	109201-Lake and pond

Source: JICA Study Team

Appendix 4

Macro Traffic Demand Analysis for Land Transport Sector

This Appendix shows some materials used in calculating the current traffic demands and modal share.

(1) Population Framework and Trip Production by Trip Purpose

1) Population Framework

(Population'000)

Zone No.	Year 2040										Vehicle Ownership	
	Pop	at Resident				at Working place/ at School				Pop. (daytime)		
		Primary	Secondary	Tertiary	Students	Primary	Secondary	Tertiary	Students		Private	M/C
1	249	0	0	151	74	0	0	747	85	855	77	0
2	412	0	0	359	65	0	0	412	126	525	77	0
3	598	0	0	523	86	0	10	604	79	682	77	0
4	341	0	0	317	42	0	23	217	38	260	77	0
5	421	0	0	308	85	0	3	114	78	224	77	0
6	440	0	0	260	140	0	38	810	126	1,015	62	0
7	1,569	1	0	706	526	1	236	382	509	1,465	62	6
8	1,739	8	0	870	623	8	378	187	679	1,490	62	6
9	425	0	0	254	132	0	58	400	121	618	46	6
10	568	3	0	337	176	3	118	256	158	587	46	6
11	1,497	8	0	788	528	8	117	161	509	967	46	6
12	1,062	8	0	780	246	8	196	160	237	630	31	6
13	967	5	0	431	324	5	633	345	352	1,543	31	6
14	1,151	28	0	710	332	28	306	339	336	1,090	31	6
15	1,641	18	0	899	546	18	191	253	491	1,131	31	6
total	13,082	79	0	7,694	3,924	79	2,308	5,386	3,924	13,082	50	5

2) Trip Production by Trip Purpose (%) (Gross: No. of Trip per Person (above 6 years old))

Purpose	%	Rate
To Work	25	0.50
To School	20	0.40
To Home	48	0.96
Others	7	0.14
Total	100	2.00

(2) Models

1) Trip Generation Model

Trip Generation(G_i) = g_i x_i +Constant

Purpose(x_i)		Generation Rate (g_i)	Constant
To Work	Secondary (at resident) + Resident (at resident)	0.8	20
To School	Students (at resident)	0.9	15
To Home	Fold back "To Work" and "To School"		
Others	Population	0.14	

2) Trip Attraction Model

Trip Attraction(A_j) =a_i x_i +Constant

Purpose(x_i)		Attraction Rate (a_i)	Constant
To Work	Secondary Workers (daytime)	0.8	10
	Tertiary Workers (daytime)	0.9	10
To School	Students (at school)	0.95	18
To Home	Fold back "To Work" and "To School"		
Others	Population	0.12	10

(3) OD Matrix

1) Present Condition

To Work

Initialize 1

Iterate 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	93.9	13.2	5.8	4.1	2.5	5.2	3.1	1.4	1.0	0.7	0.9	0.9	0.7	1.0
2	22.1	104.9	4.7	1.1	1.9	4.9	1.1	1.2	1.0	0.4	0.6	0.6	0.4	0.4
3	58.7	28.7	206.5	8.2	23.3	15.7	6.5	3.3	2.7	1.8	2.0	2.2	1.9	1.9
4	67.2	10.9	13.4	96.5	12.8	9.2	12.7	2.8	2.0	1.9	1.8	1.9	2.0	3.8
5	43.5	18.9	39.2	13.3	123.0	19.7	10.4	3.9	3.4	2.5	2.5	3.8	2.8	2.6
6	10.4	5.8	3.1	1.1	2.3	100.9	2.0	2.3	2.7	1.0	1.2	1.6	0.6	0.6
7	55.4	12.3	11.6	13.8	10.9	17.9	268.4	6.0	4.5	4.0	4.4	7.2	9.0	6.9
8	12.0	6.0	2.9	1.5	2.0	9.9	2.9	133.6	6.0	1.7	3.2	2.4	1.0	0.9
9	9.1	5.1	2.4	1.1	1.8	12.1	2.2	6.1	86.9	1.7	3.3	2.4	0.7	0.7
10	8.0	3.0	2.0	1.3	1.7	5.7	2.5	2.3	2.2	87.3	2.4	3.7	1.0	0.8
11	7.2	2.9	1.6	0.9	1.2	4.8	2.0	3.0	3.0	1.7	132.4	1.5	0.7	0.6
12	29.6	11.3	6.8	3.6	6.9	24.5	12.7	8.5	8.3	10.3	5.9	201.9	4.3	2.5
13	13.6	4.5	3.7	2.5	3.3	6.1	10.1	2.4	1.6	1.7	1.7	2.8	51.4	1.3
14	29.9	6.9	5.8	7.1	4.6	8.9	11.8	3.3	2.3	2.1	2.4	2.4	2.0	24.5
15	22.4	3.3	1.8	1.3	1.0	2.3	1.6	0.7	0.5	0.4	0.5	0.5	0.4	0.5
Total	482.7	237.6	310.9	157.2	199.0	247.8	349.8	180.9	128.3	119.5	166.0	236.0	78.9	49.0

Max F(G) 1.00 Min F(G) 1.00
Max F(A) 1.00 Min F(A) 1.00

To School

Initialize 2

Iterate 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	104.1	4.9	1.3	1.6	0.3	0.5	0.4	0.8	0.3	0.3	0.3	0.2	0.4	1.4
2	8.5	201.8	9.4	1.8	1.9	5.1	0.7	6.2	3.1	1.5	1.7	0.8	1.4	2.9
3	1.4	5.7	126.1	1.6	4.0	1.1	0.4	1.1	0.5	0.5	0.4	0.2	0.6	1.3
4	0.9	0.6	0.9	65.3	0.8	0.3	0.7	0.5	0.2	0.3	0.2	0.1	0.4	2.5
5	0.3	1.0	3.6	1.3	71.8	0.6	0.3	0.5	0.3	0.3	0.2	0.2	0.4	0.8
6	1.0	5.2	1.9	0.7	1.1	184.5	0.8	7.8	7.3	2.4	2.2	1.6	1.2	2.4
7	0.4	0.5	0.5	1.4	0.4	0.5	135.3	1.1	0.5	0.7	0.5	0.6	3.2	4.4
8	1.5	6.6	2.0	1.5	1.1	8.2	1.8	219.9	33.8	7.9	15.4	4.1	3.9	7.2
9	0.6	3.3	1.0	0.6	0.6	7.7	0.8	34.1	107.8	4.9	10.1	2.7	1.4	2.6
10	0.5	1.3	0.7	0.8	0.5	2.0	0.9	6.5	4.0	136.6	6.1	5.7	2.3	3.4
11	0.6	1.9	0.7	0.6	0.4	2.3	0.9	15.6	10.1	7.5	196.3	1.9	1.9	3.6
12	0.2	0.6	0.3	0.2	0.3	1.3	0.7	3.0	2.0	5.1	1.4	130.7	1.4	1.2
13	0.1	0.3	0.2	0.2	0.2	0.2	0.9	0.7	0.2	0.5	0.3	0.3	39.6	0.8
14	1.8	2.2	1.7	5.4	1.1	1.8	5.1	5.2	1.9	3.0	2.5	1.1	3.2	90.1
15	7.2	4.1	1.5	2.0	0.6	1.2	1.0	2.2	1.0	1.2	1.2	0.6	1.2	4.2
Total	128.9	239.3	151.0	84.7	84.7	217.3	151.0	305.6	173.1	173.1	239.3	151.0	62.6	128.9

Max F(G) 1.00 Min F(G) 1.00
Max F(A) 1.00 Min F(A) 1.00

Others

Initialize 3

Iterate 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	32.5	1.3	0.4	0.2	0.1	0.4	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0
2	6.1	45.4	1.1	0.2	0.3	1.4	0.1	0.3	0.2	0.1	0.1	0.0	0.1	0.0
3	8.5	5.8	56.5	0.9	3.0	2.6	0.6	0.5	0.4	0.3	0.2	0.1	0.4	0.0
4	7.1	1.2	1.2	33.8	1.0	0.9	0.9	0.3	0.2	0.2	0.1	0.0	0.3	0.1
5	4.4	2.6	5.3	1.3	39.7	2.6	0.8	0.5	0.4	0.4	0.2	0.1	0.6	0.0
6	2.0	1.6	0.6	0.2	0.3	42.5	0.3	0.6	0.8	0.3	0.2	0.1	0.2	0.0
7	7.9	2.0	1.4	1.8	1.1	3.0	74.9	1.0	0.7	0.9	0.6	0.3	3.2	0.2
8	2.4	1.7	0.5	0.2	0.3	3.0	0.4	73.0	2.2	0.7	0.9	0.2	0.4	0.0
9	0.8	0.7	0.2	0.1	0.1	2.0	0.2	1.1	37.3	0.3	0.5	0.1	0.1	0.0
10	0.7	0.3	0.2	0.1	0.1	0.7	0.2	0.3	0.3	36.9	0.3	0.1	0.2	0.0
11	1.0	0.6	0.2	0.1	0.1	1.0	0.2	0.7	0.7	0.5	62.8	0.1	0.2	0.0
12	2.9	1.5	0.6	0.3	0.5	3.7	1.1	1.3	1.3	2.5	0.7	58.9	1.0	0.0
13	0.4	0.2	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.0	18.7	0.0
14	1.9	0.5	0.3	0.4	0.2	0.6	0.6	0.3	0.2	0.2	0.1	0.0	0.2	39.9
15	2.6	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0
Total	81.2	65.8	68.8	39.8	47.1	64.9	80.7	80.1	44.9	43.5	67.1	60.1	25.9	40.2

Max F(G) 1.00 Min F(G) 1.00
Max F(A) 1.00 Min F(A) 1.00

To Home

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	230.4	36.7	68.5	75.3	48.3	13.3	63.7	15.9	10.5	9.2	8.8	32.7	14.1	33.6
2	19.4	352.2	40.2	12.7	22.6	12.6	14.7	14.2	9.1	4.6	5.4	13.4	4.9	9.5
3	7.4	15.2	389.2	15.6	48.1	5.5	13.5	5.3	3.5	2.9	2.5	7.7	4.0	7.7
4	5.8	3.0	10.8	195.6	15.9	2.0	17.0	3.1	1.7	2.2	1.6	4.1	2.8	12.9
5	3.0	4.1	30.2	14.6	234.5	3.7	12.5	3.3	2.4	2.3	1.7	7.7	3.6	6.0
6	6.1	11.4	19.4	10.3	22.9	327.9	21.4	21.1	21.8	8.4	8.1	29.4	6.6	11.3
7	3.6	2.0	7.5	14.4	11.5	3.0	478.5	5.1	3.1	3.6	3.1	14.4	11.3	17.6
8	2.3	7.6	4.9	3.5	4.9	10.7	8.1	426.5	41.3	9.1	19.3	12.8	3.2	8.7
9	1.4	4.3	3.6	2.4	4.1	10.8	5.6	41.9	232.0	6.4	13.8	11.6	1.9	4.4
10	1.1	2.0	2.6	2.5	3.2	3.7	5.6	10.3	6.9	260.8	9.7	17.9	2.4	5.3

2) Future Demand Forecast (Vehicle Ownership Rate = 50/ pop. 1000)

Initialize 1

Iterate 1

To Work

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	48.1	14.3	14.5	6.0	1.9	14.6	6.1	2.8	2.9	1.6	1.6	2.4	8.2	3.8
2	45.8	152.8	27.1	3.7	3.2	31.8	5.2	5.3	6.3	2.3	2.6	3.5	10.3	3.4
3	51.5	30.1	212.2	11.6	16.3	43.0	12.4	6.5	7.5	4.0	3.6	5.4	21.5	7.2
4	44.6	8.6	24.2	99.2	6.9	19.0	18.4	4.1	4.2	3.3	2.4	3.5	17.9	10.9
5	26.9	13.9	64.7	13.1	36.9	37.8	13.9	5.4	6.6	4.0	3.1	6.4	22.9	6.8
6	20.2	13.7	16.7	3.5	3.7	92.0	8.6	9.9	17.0	5.0	4.7	8.5	16.0	4.9
7	39.6	10.4	22.3	15.9	6.3	40.1	289.5	9.5	10.1	7.3	6.3	14.4	86.1	21.4
8	39.7	23.7	25.8	7.9	5.4	102.5	21.0	306.0	62.5	14.8	21.6	21.8	45.4	13.5
9	6.2	4.2	4.4	1.2	1.0	26.0	3.3	9.3	147.6	3.0	4.5	4.5	6.5	2.0
10	9.1	4.1	6.3	2.5	1.6	20.2	6.3	5.8	7.9	190.1	5.6	11.9	14.8	3.9
11	47.6	23.5	29.4	9.7	6.5	100.0	28.8	44.7	63.3	29.6	148.4	28.5	60.8	18.4
12	42.4	19.5	26.7	8.4	8.1	109.8	39.8	27.1	37.8	38.2	17.2	163.4	82.6	15.4
13	5.8	2.2	4.1	1.7	1.1	8.2	9.3	2.2	2.1	1.8	1.4	3.2	322.8	2.4
14	30.1	8.3	15.8	11.5	3.8	28.0	26.1	7.4	7.5	5.5	4.9	6.8	27.3	402.3
15	194.6	34.6	43.1	18.3	7.2	62.4	29.6	13.2	14.9	9.4	9.3	13.0	45.5	19.1
Total	652.0	363.6	537.0	214.3	109.9	735.3	518.7	458.9	397.9	319.9	237.2	297.3	790.5	535.3

Max F(G) 1.00 Min F(G) 1.00

Max F(A) 1.00 Min F(A) 1.00

Initialize 2

Iterate 2

To School

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	69.0	10.4	1.5	1.1	0.9	0.8	4.3	3.7	0.3	0.2	1.1	0.5	0.6	1.0
2	4.7	64.1	3.8	0.4	1.8	2.6	2.9	9.7	0.8	0.4	2.2	0.8	0.8	0.7
3	2.1	11.3	84.5	1.0	10.2	1.6	4.3	4.7	0.4	0.3	1.3	0.6	1.0	0.9
4	1.6	1.4	1.1	49.7	2.4	0.4	8.3	2.2	0.1	0.2	0.7	0.3	0.7	1.8
5	1.3	5.7	10.9	2.2	77.1	2.3	9.7	6.3	0.6	0.6	2.0	1.4	2.0	1.5
6	1.3	8.9	1.8	0.4	2.5	122.6	6.9	28.7	4.5	1.5	6.3	3.6	1.7	1.4
7	6.0	9.1	4.5	7.7	9.5	6.3	451.1	44.2	2.9	4.5	17.9	14.2	47.3	27.6
8	4.2	24.9	4.0	1.7	5.1	21.3	35.7	492.5	42.7	10.4	100.4	19.9	11.6	9.0
9	0.4	2.5	0.4	0.1	0.6	4.1	2.9	53.4	101.9	1.3	12.4	2.6	0.8	0.7
10	0.5	1.8	0.5	0.3	0.9	1.9	6.4	18.1	1.8	178.3	13.7	9.8	2.4	1.5
11	1.6	7.2	1.4	0.7	2.0	5.8	18.3	128.1	12.1	9.8	465.6	9.4	5.7	4.6
12	0.7	2.7	0.6	0.3	1.5	3.5	15.4	26.8	2.7	7.6	10.1	246.6	4.6	1.6
13	0.5	1.6	0.6	0.4	1.2	0.9	29.3	8.9	0.5	1.1	3.5	2.6	371.9	1.6
14	1.3	2.1	0.8	1.5	1.3	1.2	24.9	10.0	0.6	0.9	4.0	1.4	2.4	378.6
15	33.7	26.6	5.2	3.8	4.5	5.1	35.9	30.8	2.1	2.7	14.3	4.8	6.5	9.1
Total	128.8	179.9	121.3	71.1	121.0	180.2	656.4	868.3	174.0	220.0	656.0	318.3	461.0	441.7

Max F(G) 1.00 Min F(G) 1.00

Max F(A) 1.00 Min F(A) 1.00

Initialize 3

Iterate 3

Others

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	17.0	3.8	2.4	0.9	0.3	2.2	1.4	0.7	0.5	0.3	0.2	0.3	1.3	0.7
2	7.4	34.6	3.8	0.3	0.5	4.4	0.8	1.2	0.9	0.3	0.3	0.3	1.3	0.4
3	6.9	5.7	51.5	1.2	3.1	5.1	2.0	1.2	0.9	0.5	0.3	0.4	2.5	0.9
4	4.8	1.0	2.2	28.8	0.9	1.5	2.9	0.6	0.4	0.3	0.2	0.2	1.7	1.4
5	3.2	2.3	10.1	1.5	26.5	4.7	2.6	1.1	0.8	0.6	0.3	0.6	2.9	1.0
6	3.2	3.2	2.5	0.4	0.7	34.7	2.0	3.3	4.0	1.1	0.7	1.2	2.7	0.9
7	8.7	2.6	4.2	3.2	1.6	8.3	143.7	3.6	2.3	2.0	1.2	2.7	26.4	6.7
8	6.8	5.7	3.9	1.0	1.0	21.4	5.5	153.2	18.7	3.7	4.5	3.5	9.1	2.9
9	1.4	1.3	0.9	0.2	0.2	7.9	1.1	5.8	34.6	1.0	1.3	1.0	1.6	0.5
10	1.5	0.9	0.9	0.3	0.3	3.9	1.7	2.1	1.9	57.8	1.2	2.4	3.2	0.9
11	6.2	4.1	3.3	0.9	0.9	14.9	5.9	14.6	13.7	6.5	119.7	3.6	9.5	3.1
12	4.8	2.9	2.7	0.7	1.1	15.4	8.2	7.0	6.5	8.2	2.2	71.9	12.8	2.3
13	1.5	0.7	1.0	0.4	0.3	2.2	5.1	1.1	0.7	0.7	0.4	0.8	119.5	0.9
14	5.3	1.6	2.3	1.8	0.7	4.5	8.0	2.3	1.4	1.2	0.7	0.9	5.3	123.6
15	41.3	7.4	6.0	2.3	1.2	9.1	6.8	3.4	2.4	1.7	1.2	1.5	7.3	3.6
Total	119.9	77.7	97.8	43.9	39.3	140.3	197.8	201.0	89.6	85.7	134.2	91.1	207.8	150.0

Max F(G) 1.00 Min F(G) 1.00

Max F(A) 1.00 Min F(A) 1.00

To Home

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	134.0	57.9	60.5	51.0	31.4	24.7	54.4	50.7	8.0	11.1	55.4	47.9	7.8	36.7
2	28.4	251.5	47.1	11.0	21.9	25.8	22.1	54.3	8.0	6.7	34.8	25.0	4.5	12.0
3	18.4	34.7	348.2	27.5	85.7	21.0	31.0	33.8	5.7	7.7	34.2	30.1	5.8	18.9
4	7.9	4.5	13.8	177.6	16.9	4.3	26.8	10.6	1.5	3.1	11.3	9.4	2.4	14.8
5	3.1	5.4	29.6	10.1	140.5	6.9	17.4	11.5	1.8	2.8	9.4	10.7	2.6	5.8
6	17.7	38.8	49.7	21.0	44.8	249.4	54.7	145.2	38.1	26.0	120.7	128.8	11.3	33.7
7	11.9	8.9	18.7	29.6	26.1	17.4	884.3	62.2	7.3	14.4	53.0	63.4	43.7	59.0
8	7.2	16.3	12.4	6.9	12.7	41.9	57.2	951.8	68.5	26.0	187.4	61.0	12.3	19.7
9	3.7	8.0	8.8	4.7	8.0	25.5	15.3	124.0	284.1	11.6	89.1	47.1	3.3	9.4
10	2.2	3.1	4.9	3.9	5.2	7.6	13.8	28.9	5.3	426.2	45.9	54.0	3.6	7.6

3) Future Demand Forecast (Vehicle Ownership Rate = 100/ pop. 1000)

To Work

Initialize 1

Iterate 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	48.1	14.3	14.5	6.0	1.9	14.6	6.1	2.8	2.9	1.6	1.6	2.4	8.2	3.8
2	45.8	152.8	27.1	3.7	3.2	31.8	5.2	5.3	6.3	2.3	2.6	3.5	10.3	3.4
3	51.5	30.1	212.2	11.6	16.3	43.0	12.4	6.5	7.5	4.0	3.6	5.4	21.4	7.2
4	44.6	8.6	24.2	99.2	6.9	19.0	18.4	4.1	4.2	3.3	2.4	3.5	17.9	10.9
5	26.9	13.9	64.7	13.1	36.9	37.8	13.9	5.4	6.6	4.0	3.1	6.4	22.9	6.8
6	20.2	13.7	16.7	3.5	3.7	92.0	8.6	9.9	17.0	5.0	4.7	8.5	16.0	4.9
7	39.7	10.5	22.3	15.9	6.3	40.1	289.5	9.5	10.1	7.3	6.3	14.4	86.1	21.4
8	39.7	23.7	25.8	7.9	5.4	102.5	21.0	306.0	62.5	14.8	21.6	21.8	45.4	13.5
9	6.2	4.2	4.4	1.2	1.0	26.0	3.3	9.3	147.6	3.0	4.5	4.5	6.5	2.0
10	9.1	4.1	6.3	2.5	1.6	20.2	6.3	5.8	7.9	190.1	5.6	11.9	14.8	3.9
11	47.6	23.5	29.4	9.7	6.5	100.0	28.8	44.7	63.3	29.6	148.4	28.5	60.7	18.4
12	42.4	19.5	26.8	8.4	8.1	109.8	39.8	27.1	37.8	38.2	17.2	163.4	82.5	15.4
13	5.8	2.2	4.1	1.7	1.1	8.2	9.3	2.2	2.1	1.9	1.4	3.2	323.0	2.4
14	30.1	8.3	15.8	11.5	3.8	28.0	26.1	7.4	7.5	5.5	4.9	6.8	27.3	402.3
15	194.6	34.6	43.1	18.3	7.2	62.4	29.6	13.2	14.9	9.4	9.3	13.0	45.4	19.1
Total	652.0	363.6	537.0	214.3	109.9	735.3	518.7	458.9	397.9	319.9	237.2	297.3	790.5	535.3

Max F(G) 1.00 Min F(G) 1.00
Max F(A) 1.00 Min F(A) 1.00

To School

Initialize 2

Iterate 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	69.0	10.4	1.5	1.1	0.9	0.8	4.3	3.7	0.3	0.2	1.1	0.5	0.6	1.0
2	4.7	64.1	3.8	0.4	1.8	2.6	2.9	9.7	0.8	0.4	2.2	0.8	0.8	0.7
3	2.1	11.3	84.5	1.0	10.2	1.6	4.3	4.7	0.4	0.3	1.3	0.6	1.0	0.9
4	1.6	1.4	1.1	49.7	2.4	0.4	8.3	2.2	0.1	0.2	0.7	0.3	0.7	1.8
5	1.3	5.7	10.9	2.2	77.1	2.3	9.7	6.3	0.6	0.6	2.0	1.4	2.0	1.5
6	1.3	8.9	1.8	0.4	2.5	122.6	6.9	28.7	4.5	1.5	6.3	3.6	1.7	1.4
7	6.0	9.1	4.5	7.7	9.5	6.3	451.1	44.2	2.9	4.5	17.9	14.2	47.3	27.6
8	4.2	24.9	4.0	1.7	5.1	21.3	35.7	492.5	42.7	10.4	100.4	19.9	11.6	9.0
9	0.4	2.5	0.4	0.1	0.6	4.1	2.9	53.4	101.9	1.3	12.4	2.6	0.8	0.7
10	0.5	1.8	0.5	0.3	0.9	1.9	6.4	18.1	1.8	178.3	13.7	9.8	2.4	1.5
11	1.6	7.2	1.4	0.7	2.0	5.8	18.3	128.1	12.1	9.8	465.6	9.4	5.7	4.6
12	0.7	2.7	0.6	0.3	1.5	3.5	15.4	26.8	2.7	7.6	10.1	246.6	4.6	1.6
13	0.5	1.6	0.6	0.4	1.2	0.9	29.3	8.9	0.5	1.1	3.5	2.6	371.9	1.6
14	1.3	2.1	0.8	1.5	1.3	1.2	24.9	10.0	0.6	0.9	4.0	1.4	2.4	378.6
15	33.7	26.6	5.2	3.8	4.5	5.1	35.9	30.8	2.1	2.7	14.3	4.8	6.5	9.1
Total	128.8	179.9	121.3	71.1	121.0	180.2	656.4	868.3	174.0	220.0	656.0	318.3	461.0	441.7

Max F(G) 1.00 Min F(G) 1.00
Max F(A) 1.00 Min F(A) 1.00

Others

Initialize 3

Iterate 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	17.0	3.8	2.4	0.9	0.3	2.2	1.4	0.7	0.5	0.3	0.2	0.3	1.3	0.7
2	7.4	34.6	3.8	0.3	0.5	4.4	0.8	1.2	0.9	0.3	0.3	0.3	1.3	0.4
3	6.9	5.7	51.5	1.2	3.1	5.1	2.0	1.2	0.9	0.5	0.3	0.4	2.5	0.9
4	4.8	1.0	2.2	28.8	0.9	1.5	2.9	0.6	0.4	0.3	0.2	0.2	1.7	1.4
5	3.2	2.3	10.1	1.5	26.5	4.7	2.6	1.1	0.8	0.6	0.3	0.6	2.9	1.0
6	3.2	3.2	2.5	0.4	0.7	34.7	2.0	3.3	4.0	1.1	0.7	1.2	2.7	0.9
7	8.7	2.6	4.2	3.2	1.6	8.3	143.7	3.6	2.3	1.9	1.2	2.7	26.4	6.7
8	6.8	5.7	3.9	1.0	1.0	21.4	5.5	153.2	18.7	3.7	4.5	3.5	9.1	2.9
9	1.4	1.3	0.9	0.2	0.2	7.9	1.1	5.8	34.6	1.0	1.3	1.0	1.6	0.5
10	1.5	0.9	0.9	0.3	0.3	3.9	1.7	2.1	1.9	57.8	1.2	2.4	3.2	0.9
11	6.2	4.1	3.3	0.9	0.9	14.9	5.9	14.6	13.7	6.5	119.6	3.6	9.5	3.1
12	4.8	2.9	2.7	0.7	1.1	15.4	8.2	7.0	6.5	8.2	2.2	71.9	12.8	2.3
13	1.5	0.7	1.0	0.4	0.3	2.2	5.1	1.1	0.7	0.7	0.4	0.8	119.5	0.9
14	5.3	1.6	2.3	1.8	0.7	4.5	8.0	2.3	1.4	1.2	0.7	0.9	5.3	123.6
15	41.3	7.4	6.0	2.3	1.2	9.1	6.8	3.4	2.4	1.7	1.2	1.5	7.3	3.6
Total	119.9	77.7	97.8	43.9	39.3	140.3	197.8	201.0	89.6	85.7	134.2	91.1	207.8	150.0

Max F(G) 1.00 Min F(G) 1.00
Max F(A) 1.00 Min F(A) 1.00

To Home

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	134.0	57.9	60.5	51.0	31.4	24.7	54.4	50.7	7.9	11.1	55.4	47.9	7.8	36.7
2	28.4	251.5	47.1	11.0	21.9	25.8	22.1	54.3	8.0	6.7	34.8	25.1	4.5	12.0
3	18.4	34.7	348.2	27.5	85.7	21.0	31.0	33.8	5.7	7.7	34.2	30.1	5.8	18.9
4	7.9	4.5	13.8	177.6	16.9	4.3	26.8	10.6	1.5	3.1	11.3	9.4	2.4	14.8
5	3.1	5.4	29.6	10.1	140.5	6.9	17.4	11.5	1.8	2.8	9.4	10.7	2.6	5.8
6	17.7	38.8	49.7	21.0	44.8	249.4	54.7	145.2	38.1	26.0	120.7	128.8	11.3	33.7
7	11.9	8.9	18.7	29.6	26.1	17.4	884.3	62.2	7.3	14.4	53.0	63.4	43.7	58.9
8	7.2	16.3	12.4	6.9	12.7	41.9	57.2	951.8	68.5	26.0	187.4	61.0	12.3	19.7
9	3.7	8.0	8.8	4.7	8.0	25.5	15.3	124.0	284.1	11.6	89.1	47.1	3.3	9.4
10	2.2	3.1	4.9	3.9	5.2	7.6	13.8	28.9	5.3	426.2	45.9	54.0	3.6	7.6

Appendix 5

Materials for First Stakeholder Meeting

Appendix 5.1: Invitation Letter for First Stakeholder Meeting

The Republic of the Union of Myanmar

Yangon Region Government

Yangon City Development Committee

(The Strategic Urban Development Plan of the Greater Yangon)

City Hall, Yangon City.

Letter No. 102/02/ (009)/SaTaKa(Urban Planning)

Date: 2013, January 16th.

Subjects: Meeting

1st Stakeholder Meeting on the Strategic Urban Development Plan of the Greater Yangon which is cooperated between the Yangon City Development Committee and Japan International Cooperation Committee (JICA) shall be held as the following order and would like to request your presences at the meeting:

Date: 18-1-2013 (Friday)

Time: 9:30 A.M.

Place: City Hall

Yangon City Development Committee

Chairman (On Behalf)

(Toe Aung, Secretary)

Distribution

- Secretary, Yangon City Development Committee
- Committee Member (7), Yangon City Development Committee
- Dr. Kyaw Latt, Consultant, Yangon City Development Committee
- U Than, Consultant, Yangon City Development Committee
- U San Maung Myint, Consultant, Yangon City Development Committee
- Head of Department, Management Department (Request to decorate the Hall)
- Head of Department, Department of Cleansing and Pollution Control
- Head of Department, Urban Planning and Land Administration
- Head of Department, Engineering (Buildings) (Request to set up Projector)
- Head of Department, Engineering (Roads and Bridges)
- Head of Department, Engineering (Water and Sanitation)
- Head of Department, Department of Parks, Playgrounds and Gardens
- Chief Engineers, Public Construction Service, Yangon Region
- General Manager, Myanmar Railways (Lower Myanmar)

- Chief Engineers, Yangon City Electricity Supply Board
- Chief Engineers (Urban), Myanmar Port Authority
- Chairman, Buses Lines Control and Supervising Committee
- Chief Director, Development Affairs Department, Yangon Region
- Chief Director, Transport Planning Department, Yangon Region
- JICA Myanmar Office
- JICA Study Team

Copy sent to

- Chairman (Mayor), Yangon City Development Committee
- Committee Member (3), Yangon City Development Committee
- Committee Member (4), Yangon City Development Committee
- Committee Member (5), Yangon City Development Committee
- Head of Department, Public Relation and Information Department(Request to set up P.A system)
- Chief Office Staffs, Committee Office
- Office Use

The Programs for the 1st Stakeholder Meeting on the Strategic Urban Development Plan of the Greater Yangon which will be held on 18th January, 2013, Friday, 09:30 A.M. at Yangon City Development Committee Main Hall.

Agenda (1) - Announcing of the Opening of the Meeting.

Agenda (2) - Opening Speech delivered by U Kyaw Soe, Secretary, Yangon City Development Committee.

Agenda (3) - Explanation of the reason why the Stakeholder meeting is being held by Mr. Shigeru SAI, Strategic Environmental Assessment/ Environmental and Social Consideration Expert.

Agenda (4) - Explanation of the Development Vision & Structure Plan and the Strategic Environmental Assessment (SEA) for the Structure Plans by U Toe Aung, Deputy Head of Department, Urban Planning Division.

Agenda (5) - Explanation of the Urban Infrastructure Development Strategies by U Win Hlaing Htun, Assistant Head of Department, Urban Planning Division.

Agenda (6) - Presentation on the Preliminary Idea of Land Use Plan by Daw Khine Moe Nyunt, Head of Division, Urban Planning Department.

Agenda (7) - Discussion upon the Strategic Urban Development Plan of the Greater Yangon by Dr. Kyaw Latt, Urban Planning Consultant.

Agenda (8) - Questions and Answers

Agenda (9) - Closing Speech delivered by U Kyaw Soe, Secretary, Yangon City Development Committee.

Agenda (10) - Ending of the Meeting.

Appendix 5.2: Attendee List of First Stakeholder Meeting

List of Attendee

At the 1st Stakeholder Meeting of the Steering Committee for the Strategic Urban Development Plan of the Greater Yangon which was held at the Yangon City Hall on 9:30 Friday (18.Jan.2013).

~~Government Officials~~ Yangon Region Hluttaw

No	Name	Position	Department	Signature
~~1~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	
2	[illegible]	[illegible]	[illegible]	
3	[illegible]	[illegible]	[illegible]	
4	[illegible]	[illegible]	[illegible]	
5	[illegible]	[illegible]	[illegible]	
6	[illegible]	[illegible]	[illegible]	
7	[illegible]	[illegible]	[illegible]	
8	[illegible]	[illegible]	[illegible]	
9	[illegible]	[illegible]	[illegible]	
10	[illegible]	[illegible]	[illegible]	
11	[illegible]	[illegible]	[illegible]	
12	[illegible]	[illegible]	[illegible]	
13	[illegible]	[illegible]	[illegible]	
~~14~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	
~~15~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	
16	[illegible]	[illegible]	[illegible]	
17	[illegible]	[illegible]	[illegible]	
18	Dr. Soe Thu Htun	[illegible]	[illegible]	
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

List of Attendee

At the 1st Stakeholder Meeting of the Steering Committee for the Strategic Urban Development Plan of the Greater Yangon which was held at the Yangon City Hall on 9:30 Friday (18.Jan.2013).

Yangon Region Hluttaw

No	Name	Position	Department	Signature
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

List of Attendee

At the 1st Stakeholder Meeting of the Steering Committee for the Strategic Urban Development Plan of the Greater Yangon which was held at the Yangon City Hall on 9:30 Friday (18.Jan.2013).

No	Name	Position	Department	Signature
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

25 + 24 → 49

List of Attendee

At the 1st Stakeholder Meeting of the Steering Committee for the Strategic Urban Development Plan of the Greater Yangon which was held at the Yangon City Hall on 9:30 Friday (18.Jan.2013).

Government Officials

No	Name	Position	Department	Signature
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

List of Attendee

At the 1st Stakeholder Meeting of the Steering Committee for the Strategic Urban Development Plan of the Greater Yangon which was held at the Yangon City Hall on 9:30 Friday (18.Jan.2013).

YCDC

No	Name	Position	Department	Signature
1	[illegible]	[illegible]	[illegible]	[illegible]
2	U San May Myat	Advisor	Committee	
3	U [illegible]	Head of Dept.	Market	
4	U Aye Kyaw Naing	Head of Dept.	Inspection.	
5	U Soe Myint (2)	"	Assors' Dept.	
6	Dr. Myat Mon Aye	"	Health Dept.	
7	P.Col Kyaw Swe	Head.	S. and D. [illegible]	
8	U Than	Advisor	YCDC	
9	[illegible]	[illegible]	[illegible]	
10	Dr [illegible]	Advisor	YCDC	
11	[illegible]	[illegible]	[illegible]	
12	[illegible]	"	[illegible]	
13	[illegible]	"	[illegible]	
14	[illegible]	[illegible] "	[illegible]	
15	[illegible]	[illegible]	[illegible]	
16	[illegible]	"	[illegible]	
17	[illegible]	"	[illegible]	
18	[illegible]	"	[illegible]	
19	[illegible]	"	[illegible]	
20	[illegible]	"	[illegible]	
21	[illegible]	"	[illegible]	
22	[illegible]	[illegible]	[illegible]	
23	[illegible]	[illegible]	"	
24	[illegible]	[illegible]	"	
25	[illegible]	"	"	
26	[illegible]	"	"	
27	[illegible]	"	"	
28	[illegible]	[illegible]	"	
29	[illegible]	"	"	
30	[illegible]	"	"	
31	[illegible]	"	"	

List of Attendee

At the 1st Stakeholder Meeting of the Steering Committee for the Strategic Urban Development Plan of the Greater Yangon which was held at the Yangon City Hall on 9:30 Friday (18.Jan.2013).

Media

32+32+2=(66)

No	Name	Position	Department	Signature
1	Hein Ko Soe	Sr Reporter	Express Times	
2	Ei Ei Khaing	"	RFA	
3	Mya Mejirt San	Reporter.	Messenger	
4	Thee Zar Chi Khaing	Reporter	MNTV	
5	Dweni Tin Maung	"	"	
6	TIN AUNG KYAW	CORRESPONDENT	BBC	
7	Soe San Aung.	Reporter.	Snap shot & Monitor.	
8	Min Pa Pa Tun	Reporter.	Hot News	
9	Aye Mya Mya Htun	Senior Reporter	Yangon Times	
10	H[illegible] Khi	Deputy Editor	Myan Times.	
11	Khine Khine Tun	Reporter	The Myanmar Post	
12	Kyaw Thet Aung	Reporter	Public Image	
13	Myat Thuzar Oo	Reporter	Education View	
14	Ko Ko Gyi	Reporter	Myitmakha	
15	Kaung Myat Phyo	Myitmakha "	Myitmakha	
16	Thaw Zin	Editor.	Ryi Myanmar.	
17	May Thadar	Reporter	First Weekly	May
18	Moe Nyo	Reporter	7 Day News	
19	Hla Hla win	Reporter	DVB	
20	Bo Bo Min	"	Hot News	
21	Myo Sandar Aung	"	Auto World upper	
22	Ko Kyaw Linn	Reporter	The Messenger	
23	Shwehamone	chief Reporter	Thamaga	
24	Ko Htin Maung Oo	Reporter	True News	
25	Lin Lin	"	Fresh News	
26	Thet Thet Moe Thu	Reporter	Envoy	
27	Yakana Oo	Editor	Myitmakha	
28	[illegible]	Editor	Envoy	
29	Min Thu	Reporter	Kyemon	
30	Two Two	Reporter	Hot NEWS	
31	Phyo Min Oo	Photo	Messenger	
32	Ei Phyu Mon	Reporter	7 Day News	

List of Attendee

At the 1st Stakeholder Meeting of the Steering Committee for the Strategic Urban Development Plan of the Greater Yangon which was held at the Yangon City Hall on 9:30 Friday (18.Jan.2013).

~~Yangon Region Hluttaw~~ Media

No	Name	Position	Department	Signature
1	Ye ZAR Phone Myint	Reporter	The messenger	
2	Zin Moh Aye	Reporter	Trade Times	
3	Honey	Reporter	Standard Time	Honey.
4	Thet Htar	"	The Nation	
5	Ye Linn Htut	Sub-Editor	The Trade Times	
6	Aye Chan Moe	Chief-Reporter	Favourite News	
7	ayemyintsan	reporter	The messenger	
8	Aye Nyein Thu	Senior reporter	Media One	
9	Htet Htet.	reporter.	media One.	
10	Wai Mar Tun	Reporter	Popular News	Waimar
11	Aung Shine Oo	Photographer	AP	
12	Phone Myat	reporter	Venus News	
13	Wai Nandar.	Reporter.	Sky Net	
14	Htay 2	"	Trade Times	
15	YADANA HTUN	REPORTER	AP News Agency	
16	Shwe Yinn Mar Oo	"	AFP	
17	EI MON KYAW	REPORTER	KYODO	
18	Thi Ha Thwe	Reporter	NHK	
19	Pyae Yee Phoo	"	Pyi Myanmar	
20	Hnin Thazin Wai	"	Ayeyarwady News Journal	
21	Aung Myin Ye Zaw	Reporter		
22	Hnin Nu Wai	Senior Reporter	Pyi Myanmar	
23	MYAT SU MON	Sr. Reporter	7 Day News	
24	Emily	TV. Reporter	Irrawaddy	
25	Hlaing Htet Ko	Reporter	Unity	Hlaing
26	Phyoke Aung.	Reporter.	Unity	
27	Khin Myne Phyu III	Reporter	Modern journal	
28	Thein Zaw Myo	Journalist	Kamayut Media	
29	MYAT THURA	CURRESPONDENT	KYODO NEWS.	

30 Min Thura Va

31 Lin Phyo ~~A~~'s. Reporter MRTV-4

32 Maylia

Media. List of Attendee.

(18.1.2013)

...	Reporter	The Farmer	...
...	Editor (News)	...	09-49319905

အစည်းအဝေးတက်ရောက်သူများစာရင်း ၁၈.၁.၂၀၁၃

၁။	ပြည်သူ့လွှတ်တော်	(၂၃) ဦး
၂။	ဌာနဆိုင်ရာ	(၄၉) ဦး
၃။	Y. C. D. C	(၃၁) ဦး
၄။	Media	(၆၆) ဦး
	စုစုပေါင်း	(၁၆၉) ဦး

Appendix 5.3: Minutes of Discussion on First Stakeholder Meeting

Minute of "Questions and Answer Session "

No	Comments/Questions	Response
1	● How many roads in the Northern Dagon Township would be laid in the 2013/2014 budgets year and which roads would be included? ● Is there any plan to develop the ditches to get better the drainage system in Northern Dagon Township during the rainy season? ● Is there any plan to supply more buses lines at the Ward 49, 50, 51 in the Dagon (North)? ● At No.6, Basic Primary School in New Dagon (North), the storage building has been completed in school compound. Who gives permission to construct this building? (Yangon Regional Government Hluttaw representative, U Zaw Lin)	● For the buses lines, it is still managed and handled to solve this problem linking with the Multiple Vehicles Controlling Department, which project is still realizing and this project is running under the Transportation Minister U Aung Khin's management. ● The building in the school compound has being examined by Construction Department; this case is still on the table.
2	● How long does it take to construct the waste water treatment in Yangon? (Nay Lin Htiek, People's Image, Correspondent)	● It is highly cost for establishing waste water treatment system. We have to develop sewage lines for these treatment systems. It will be the long-term project to realize the waste water treatment.
3	● When it will start operating the sky trains in Yangon? (The question is not clear; means system or operating the sky train) (Hnin Maung Oo, True News, reporter)	● We are willing to develop sky trains or MRT, we are conducting EIA and SIA survey for such kind of projects. We can't do it without the international support. Sky trains system is necessary for city development.
4	● We have learnt that there is no plan to preserve the agricultural areas in future, so do you have any management for people who are working in farmlands?	● At the present situation, we have no plans to conserve the agriculture lands. ● In our country, there are some vacant lands which are not using for agriculture. ● At these vacant lands we need to make the developments and as for agriculture lands we need to keep it for farming
5	● What kinds of benefits are explored at the new development areas? ● Do you have any plan to maintain and preserve the center of Yangon?	● Our development project will be more systematic than before. ● To maintain and preserve the downtown area is very delicate and

No	Comments/Questions	Response
	● What is the major problem of Yangon? (Tin Aung Kyaw, BBC Burmese, Correspondent)	complex because these areas is too crowded and immoveable buildings are existed in there, as you know, developing a new areas are too hard to handle but we are trying the best. ● Housing/sheltering and transportation are the major problems of Yangon City.
6	● The first question is how to control the housing market that is able to change because of the projects? ● Next one is in Yangon: Will the project provide reasonable amount of building for basic level? ● The last one is how do you handle the vendors? (Kaung Myat Phyo, Myit MaKha News Agency, Correspondent)	● Low-cost housing project is going to be realized by Department of Human Settlement & Housing Development (DHSHD). ● The housing prices would be affordable and shall be in accord with current living standard. ● For vendors, we are arranging for part-time program.
7	● How much do you expect the expenditure of these projects? ● And we would like to know how to figure the land compensation for people who are occupied, evicted problems, which are going to come out with these projects? ● Is there any possibility to cause rising the land price by the project? (Zaw Wai, The Farmer Media, Reporter)	● According to the Master Plan, priority projects would be included in coming final report, I estimate $2245 million will cost for over-all projects. ● The land acquisition will be conducted based on the Land Law which stipulates compensation based on the market price. ● We should try to exclude any factor which will cause land price rising, therefore we need cooperation from people to prevent from rising the land prices.
8	● How much financial assistance JICA will spend for Urban Development Plan? ● I've learnt the description of the plan that needs to construct new 5 MRT lines, when do you plan to start constructing MRT? (Yadanar Tun, AP News Agency, Correspondent)	● Japanese vice prime minister addressed in 3rd Steering meeting, Japan will assist 500 million US dollar loans for 2013, and 200 million US$ for grant aid. ● This aid would be for the whole nation, but I'm not sure how much allocated for Yangon project. ● For construction MRT lines, we are making research and study for new MRT lines. We have to study both SIA (Social Impact Assessments) and EIA (Environmental Impact Assessments) which can be effected by developing the new MRT lines.
9	● At the urban developing project, which one do you take the priority in	● We have to improve the current urban structure in Yangon

No	Comments/Questions	Response
	establishment of the new cities or improvement of the existing cities? ● How long will be the project period? When will public get these advantages? ● How will you manage for the people who are living at the allocated housing area in the project?	first and after that new town would be developed. ● There are many projects; long-term, middle-term and short-term projects. Our planning stage/project drafting will be completed in 2013 December. ● For current housing projects, we are developing housing projects at the vacant plots/ wild areas, but we have to solve the problems of some illegal accommodations. But these cases are nothing effect on Master Plan.
10	● How will you perform to get the suggestions from people? ● Staging plan for new urban development is going to implement by presented from the basic level, so how can be the project presented form the basic level and what kinds of ways they can use? (Ye Linn Htut, The Trade Times, Sub-Editor)	● We would like to conduct public relations through media to collect public opinion. ● The household interview survey was conducted to collect the opinions from those people so that their comments will be reflected to the project.
11	● In 2040, Yangon City will change to mega city for that need to make the preparation for every challenge, as you said. What kind of challenges do you expect? ● The second question is in current situation of YCDC what kind of difficulties and challenges have been encountered in daily management. How about the future of colonial buildings? ● What kind of assistance will be provided to Yangon Urban Development? So far we understand that you extend technical assistance to YCDC? And the next question is could you please mention the timeframe of assistances? (Including financial assistance) (Shwe YinMar Oo, AFP News Agency, Correspondent)	● This question is being asked about the technical assistance for YCDC, Urban Developing Plan, Japanese government has not decided it yet, but hoping Japanese government will continue to give the technical assistance, urban planning capacity and urban planning management. ● We will continue to ask the Japanese government to extend the technical cooperation. As you know continuation is determined normally two or three years, will be even for one phase, may be three or four more years for technical cooperation. ● For financial assistance, Japanese government will select one by one, make details of the projects how much money will need or what kind of revenue, so we compare these financial fund and then our government will decide if it is good and this is needed, Japanese government will put the financial assistance for specific project which has two types, one is grant aid and loan aid that will be based on the feasible study.
12	● Present situation of the Strategic Urban Development Plan of the	● This report is final one for current projects. Final report would be

No	Comments/Questions	Response
	Greater Yangon City? ● How will you explore required 700 land acres for Economic Zone? ● How do you manage to develop your projects saving the environment? ● For Urban Developing, what kinds of Laws are needed? (Khine Khine Tun)	included in the prioritized projects at the end of March. ● For upcoming 500,000 labor forces, we need to explore 700 acres land plots, so we have to take some agriculture lands. ● We are conducting SEA survey for all these projects and implement them with the agreements of public. ● We have no urban planning laws, so we need to promulgate the urban planning affairs like height rate control and building code.
13	● Do you have any arrangement for housing project for people; the buildings are only for people who apply for residing buildings? ● In case of land acquisition of farm lands for the project such as development of road and railway, is there any plan to prepare for them to provide job opportunities or the other places for work as compensation alternatives? ● Do you have any plan to substitute new vehicles for transportation? How about extending and repairing/fixing the roads? (Daw Ei Ei Khaing, Southern Administration Department, Administrator)	● We don't have accurate plan for relocating and selling the buildings at current projects. We are addressing the project activities to public. Whether living or selling the building is depending on owner's decision. ● Although there are no plan of land acquisition of farm lands for the project, the compensation will be conducted based market price, and we are going to consider create job opportunities for them depending on the necessity. But we can't make sure to say everyone is going to get the job at once. ● We arrange to provide the new vehicles.
14	● In these project, are all the roads of Yangon included in implementations/ all the roads are included in roads development? ● Maintenance/ change the gutter and cover of gutter are still necessary, is there any plan to solve it? ● I would like to know, do you have any idea to maintain and reconstruct the sidewalks? ● Is there any plan to manage resting the vehicle at the fixed car parking and place for passengers to rest, where need to be cleaned at the parking areas and bus stops? ● There are some problems between vehicle owners and the residents about car parking at the main roads and branch roads. How do you solve this problem?	● We have plans to develop all networks in Yangon city which are in short-term and long-term projects. It is one of our plans, but to be completed it will be long term process. ● We currently supply the necessaries equipment to solve this problem. ● We still working for reconstruction and maintaining the sidewalks. ● We are supervising the car parking case and trying to solve this problem and; car parking areas and bus stops are being kept cleaning than before. We are exploring new car parking areas in downtown. ● Problems between vehicle owners and the residents, we are working together with respective township officers to solve this problem. ● We are supplying the requirements for maintaining and changing the new excrement pipe and gutter; cleaning the rubbish of the buildings'

No	Comments/Questions	Response
	● Maintaining and changing the new excrement pipe and gutter; cleaning the rubbish of the buildings' alleys; digging up the drainages are essential to realize. Is there any plan to develop it? ● Do you have any arrangement to put the vendors in proper places systematically and to construct the high level markets? (U Lwin Min, Administration Department, Administrator, Lathar Tsp.)	alleys; digging up the drainages. ● We make markets construction for vendors, which constructions will go step by step.
15	● Is there any plan to prepare restrictions for developing the high rise buildings in township areas? ● Are there any countermeasures for illegal garbage throwing at backstreet? ● Discipline controlling status to the vendors. (Dr. Win Ko Hla, Regional Parliament Representative, Pabedan Tsp)	● Yangon City has many historical and cultural heritages buildings in CBD area such as Shwe Dagon Pagoda, Sule Pagoda and Shwe Bhone Pwint Pagoda; to maintain these national heritages we have some limitation for building high-rise. ● Concerning with these cases, we're finishing a certain height restricted manuals and methods. ● For throwing the garbage illegally in the backstreet, we are giving awareness and take the measurement throwing rubbish illegally at the backstreets are currently undergoing, we are now controlling the vendors.
16	● At the downtown area, illegal parking due to the shortage of car parking area causes traffic congestions. Do you have any idea to manage the parking areas to avoid these inconvenient? (U Tint Aung, General Administration Office, San Chaung Tsp, Assistant Administrative Officer)	● We are coping with these problems and cooperating with the Engineering Department (Roads & Bridges). ● At Bo Gyoke Road, YaeTar Shae Road and Yae Kyaw Road, etc, we are setting the car parking and it has completed in 80%. ● Considering the recent increasing vehicles numbers, we understand that securing the sufficient parking space to prevent from traffic congestions is very important.
17	● I would like to know whether YCDC has plans to establish the internet networking system between the branch offices in different townships and the main department of YCDC for urban affairs such kind of asking construction permit, grant application and altering the properties; for saving the environment and to develop the urban society, should reduce carbon dioxide emission and traffic jammed.	● I would like to invite City Planning & Land Administration Head Department, U Mya That to answer this question. We don't have right to address the exact time about E-application. ● We are working under the instruction of the Yangon Regional Government and we are now giving E-application training to government employees.

No	Comments/Questions	Response
	<u>(U Khin Maung Htoo @ U Ko Ko, Yangon Regional Hluttaw)</u>	● After finishing the training, to apply the faculties of civil services, we are arranging to form the E-application organization. And then we are linking and cooperating with KMD computer training. ● We expect to upload the YCDC website and people can apply by using online application for grant and asking permission for construction. The civil services who are going to serve in E-application center must have the skillful and experience in this field.
18	● How do you plan to share information about urgent urban planning projects to people, these projects to be implemented in the fiscal year 2013 – 2014? ● How to implement the current traffic and railway lines for people to be convenient in present situation? ● I would like to know the responsibilities of departments for these projects? <u>(Yangon Regional Government Hluttaw representative, Dr. Saw Hla Htun)</u>	● To let know the people; we are holding the Stakeholder Meeting for the Strategic Urban Development Plan of the Greater Yangon and invite the parliament representatives and medias. ● We want the media to announce our projects' activities to public and if you require much more information, come and ask our office. We have already got the instructions from our government, rules and regulations have been promulgated to address our activities to public. ● We are still operating to improve the traffic and railway lines. ● The individual departments are taking their relevant accountabilities and occasionally deliver the information to public. This is the best I can answer.
19	● We appreciate and warmly welcome this Strategic Urban Development Plan of the Greater Yangon; I used to hear that Japan assisted Singapore for developing the international standardized buildings within ten years period. ● The essential important sectors such as transportation, electricity, communication, water supply and sewages, I would like to know that can you portrait our country's developments projects within 10 years by leading Mr. SAI from JICA? <u>(U Aye Thein, Yangon Regional Hluttaw representative, Tamwe)</u>	● The members from Study team are just making the planning stage, on the other hand, arranging the plans; they have to report every proposal to JICA, and then Japanese Government makes the decision and gives the assistance for running those projects, giving assistances, there has both of the grand and loan aids, and technical cooperating. ● Japanese government figures it out and establish upon allocated budgets, but not for all. Japan Government will take account of it upon our collaboration with JICA.
20	● Which currency would be utilized for the projects, foreign currency or Myanmar Kyats?	● Concern with the current project running budget, yesterday, the economist experts from JICA shows that these projects will cost the

No	Comments/Questions	Response
	• These projects would be implemented with 100% assistance from JICA? (If 100%, no reason to object these projects) • Do these experts and technicians have the experiences in other foreign countries' development, if so, which country? • If these projects are running with the loan, who take charges of it/ who would take responsibilities for these loans? (Nyaung Lay Pin Hluttaw representative, U Tun Lwin)	estimate US$ 2245 million, which will be in mid - term period, in 2013 – 2018 allocating projects expenditures. • Everybody knows to develop in every sector, which is a little bit far away from our country situation. So we have to take the assistance from abroad and have to take the loan; that's why I would like to say, it is impossible to get the complete assistances from Japanese Government. • Here we have the expert technicians for these projects, who are selected by JICA under the instruction from Japan Government and they are still working at the other countries' projects; they make surveying the required data and analysis. • So I have learnt that they are skillful and have many experiences of other foreign countries' developments. If you want to know in details, you can ask Mr. KojiYamada who is JICA study team leader. • The last question about loan and who take the responsibility of it, for answering, it is the affair of Myanmar and Japan Governments.
21	• We are expecting that Y.C.D.C is currently working on implementing the development projects and run these projects at once. • What kinds of advantages people are getting at the age of the new government, our nations are expecting the developments and changing to progress. • I would like to suggest concern with these projects; it will be better if the short term projects are pressing ahead than long terms. (Daw Kyi Kyi Mar, Regional Hluttaw representative, Kyi Myin Taing Tsp)	• Thanks so much for your comments and suggestions. Likewise, we are serving for the nations and doing the best. • Short term projects are already in long term plans as we have mentioned before. • Some project activities might be delay because of the rules and regulations are not completed yet but we are still operating. • For instance in Yangon, building the high rises that has the high limitation rule; so far we are drawing the building code and zoning plan for it; although it might be delay but we are trying the best and to realize it as soon as possible.
22	• Realizing the Strategic Urban Development Plan of the Greater Yangon, to which extent and which percentage, would Myanmar technicians and experts can access the job opportunities?	• Every sector we need technicians to apply the local experts resources but we can't exactly say how many percent we can offer the jobs for Myanmar.

No	Comments/Questions	Response
	(Daw May Than Nwe, Regional Hluttaw representative)	● And I can say, most of the sectors we are going to run with local technicians; and the rest part of it, we are collaborating with the foreign technicians and specialists.
23	● I give my honored for hearing that the current Strategic Urban Development Plan of the Greater Yangon is 30 years long-term project. ● However, this project is expecting for long-term, so I would like to know about the short term project's effects. For example, how would the Yangon citizens access the effects of this project in upcoming 3-4 years, how much will Yangon be changed? (U Nay Myo Aung, Regional Hluttaw representative, Seit Kan Tsp)	● We are in planning stage, and this stage will be completed in upcoming December 2013. We are establishing all requirements base on researches and surveying. ● As U Win Hlaing Soe has already mentioned about the long term, urgent and short term projects, which one we need to take the priority and the short term project that we need pressing ahead; we still working and developing some cases and operating the urgent projects so far and I am sure it will give the great advantages for nation sooner or later, it supposed to be three or four years that is my view.