**SPECIAL BIDS AND AWARDS COMMITTEE**
**FOR THE NATIONAL ACADEMY OF SPORTS**

**PROCUREMENT FOR THE DESIGN AND BUILD OF THE NATIONAL ACADEMY OF SPORTS PHASE 2**

**BID BULLETIN NO. 2**

This Bid Bulletin clarifies queries raised during the Pre-bid Conference and sent via email and contains the updated schedule of the bidding activities, as well as other matters relative to the bidding for the aforementioned project:

## I. Queries raised by Prospective Bidders

| Clarificatory Questions | Clarifications |
|---|---|
| Pre-bid Conference | |
| Questions from Richbuild Construction Corporation:<br><br>a. By "similar contract of building project at least two-storey," are you referring to any building project that is two-storey?<br><br>b. Is my interpretation correct–that is, any two-storey building project that is Php137 million or more?<br><br>c. In your form, the declaration of SLCC, do we need to indicate several projects? Or one only? | Yes. The similar contract of building project refers to at least any two-storey building project.<br><br>Yes.<br><br>In the SLCC Form, you will indicate the project/s that complies with our requirement, to wit:<br><br>1. 1 similar project both in design and construction with a contract amount of not less than 50% of the ABC; or<br><br>2. A combination of one (1) completed similar construction project with a total project cost of at least 50% of the ABC **AND** |

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| | one (1) completed similar design project with a total project cost of at least 50% of the ABC. |
| d. So it's only for the submission of completed projects that we need to include all projects that we have completed? | As indicated in our answer to Item c. above, you are not required to include all completed projects in the SLCC. What we require is just a submission of a <u>similar contract</u> of either:<br>1. 1 completed Design and Build Project with a total project cost of at least 50% of the ABC; **<u>or</u>**<br>2. 1 completed design project and 1 completed construction project both with total project cost of at least 50% of the ABC. |
| But for the completed project/s for the submission of SLCC, we only need one? | Please refer to Answer c and d above. For further clarification, we included the SLCC requirements under Item III. Reminders below. |
| e. This completed project has a certificate of final acceptance. Can the wording of the certificate be different? | For government projects, we require that the SLCC shall be supported by an Owner's Certificate of Final Acceptance issued by the project owner other than the contractor. In case of contracts with the private sector, an equivalent document may be submitted. |
| f. Is the Bill of Quantities (BOQ) expected to be detailed and itemized? | Yes, SBAC requires a summary and detailed list in the BOQ and submit Detailed Cost Estimates (attached). But for the unit cost, you can put the lump sum amount, if applicable, because this is a design and build project. |

[redacted]

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| g. For the key personnel, can one key personnel occupy two concurrent positions during the implementation of the project?<br><br>In our understanding, the design phase will have to finish before the construction phase. Are we allowed to have the same architect for the design and construction? | No, we require different key personnel for both the design phase and the construction phase. In the submission of the forms for the key personnel, one (1) key personnel will only have one (1) key position. Thus, in your example, there should be two (2) architects designated, one to be assigned under the design phase and the other for the construction phase. |
| h. Is the evaluation Quality Cost Based Evaluation (QCBE) or just cost-based evaluation? | Cost-based evaluation/Lowest Calculated and Responsive Bid. |
| i. So there is no weight to the quality of the staff, the equipment, etc.? | None. Bidders must pass/comply with the minimum technical and qualification requirements for the pledged equipment and designated key personnel and support staff per the bidding documents. Only bids of bidders found to be legally, technically, and financially capable will be evaluated. |
| j. During the presentation, there was a summary of the floor area of the buildings. But if you compare that to the TOR, wala pang lobby, wala pang stairs, wala pang ramp, corridor, either pareho or sobra na 'yong floor area. What will prevail, the itemized elements of the TOR or the total GFA? | The Gross Floor Area (GFA) presented during the pre-bid conference only pertains to our minimum requirement. All the rooms and space requirements in the Terms of Reference (TOR) and Minimum Performance Standards and Specifications (MPSS) must be included in the proposed design. |
| k. So we must comply both with the itemized and the total minimum GFA? | Yes. Bidders must meet and comply with the minimum required gross floor area (GFA) and specifications for the three buildings namely, 1) Sports Science and Sports Medicine Building; 2) Additional Sports Facility (Sports center with Multi-purpose covered |

[redacted]

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| | courts) and 3) Staff Housing (3 Storey Building), as shown in Section 1.B (Table 1) in the Terms of Reference. |
| l. Is the retention fee reflected in the S-curve and the breakdown of payments? | No. it's not reflected. |
| m. Will you be requiring a certificate of site inspection? | No. Your attendance during the site inspection is not mandatory and discretionary on your end. |
| n. We will be asked to prepare plans. Will you be providing us with some basic technical documents like lot plan, geotech report, topography plan? | The lot and topography plan is provided herein as ***Annex B.*** There is no geotech report and we recommend the Contractor to conduct their own geotech investigation. |
| o. There's no required presentation for the design? | None. |
| p. Are we required to follow the architectural character of Phase 1? | Yes. The design of Phase 1 and the design concept for the structures for Phase 2, subject of this bid, should be complementary to each other. |
| q. Will you be providing us a copy of this presentation? | The presentation made during the pre-bid conference will be provided to the prospective bidders who have already bought the bid documents and have made a request for its copy.<br><br>Please be informed that all the information for this Project is contained in the bidding documents and the TOR. Clarifications and revisions to the bidding documents, if there is any, will be officially communicated via a bid bulletin, pursuant to Revised Implementing Rules and Regulations of RA9184. |

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| r. In your bid docs, the required project manager during construction was mentioned to be an engineer. In this presentation, it's architect or engineer. Which one will prevail? | The required Project Manager must be a licensed Civil Engineer. Please refer to ITB Clause 10.4 of the BDS. |
| s. What if the certificate does not indicate the total project cost? What document should we provide? | You can provide the Contract. |
| t. So there should be a cost indicated, whether it's in the certificate, contract, or whatever other proof? | Yes. The cost must be indicated in the supporting documents as proof of the contract amount and for us to determine whether the project meets the minimum requirement provided in the bidding documents. |
| u. I would assume that the technical folder will have A3 sheets for the drawings? | Yes. |
| Questions from Grand Appex Construction and ME Sicat Construction: | |
| a. Is the actual lot survey of the area provided in the bid docs? So that we can maximize the GFA. *(Grand Appex)* | Please refer to the attached Annex B for the actual lot survey. |
| b. Does that include the soil test? *(ME Sicat)* | No, we encourage the bidder to have their own soil test. |
| c. Included in the proposal? *(ME Sicat)* | Yes |
| d. In what format should we submit the architectural plans, site development plans? *(Grand Appex)* | Please submit the architectural and site development plans in printed format using at least an A3 size paper. |
| e. For the finishing of the interior of the building, is it going to be bare or finished? *(ME Sicat)* | Finished. |

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| f. Schedule of the site inspection | August 9, 2023. 9AM.<br>Meeting place: One West Building, Clark Freeport Zone, Pampanga |
| Question from QINGJIAN GROUP CO., LTD. (QJGC):<br><br>Is it allowed to use the SLCC of the foreign partner in case the bidder will be a joint venture or consortium? | Yes, it's allowed. |
| Question from Phesco Inc.:<br><br>a. For the equipment, can we use the collection receipt as proof of ownership? | The **collection receipt** is **NOT** one of the listed documents considered acceptable as proof of ownership.<br><br>As provided in ITB Clause 10.5 of the BDS, the following are the acceptable proofs of ownership if the pledged equipment is owned by the bidder:<br><br>"a. If owned, supported by any proof of ownership as follows:<br>• Deed of sale<br>• Valid OR/CR<br>• Sales invoice showing payment of VAT<br>• Proforma Invoice supported by a Sales Invoice<br>• Letter of credit from bank with attached Purchase Order supported by a Sales Invoice<br>• Original Invoice with attached Packing List<br>• Bill of Lading<br><br>And certification by the bidder of availability of equipment for the duration of the project using the prescribed form in Annex |

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| | "C-1" in the bidding documents."<br><br>If the pledged equipment is under lease or under purchase agreement, the following are required:<br><br>"b. If leased, supported by all of the following:<br>• lease agreement between lessor and lessee,<br>• proof of ownership of the lessor, and<br>• certification of availability of equipment from the equipment lessor for the duration of the project using the prescribed form in Annex "C-2" in the bidding documents;<br><br>**OR**<br><br>c. If under purchase agreement, supported by all of the following:<br>• Purchase Agreement between the bidder and the owner, and<br>• certification of availability of equipment from the vendor for the duration of the project using the prescribed form in Annex "C- 3" in the bidding documents.<br><br>Optional documents to be submitted:<br>1. Photo of the vehicle/equipment<br>2. Photo of body marking showing the capacity of the vehicle/equipment." |
| b. For the health and safety officer, should it be an OSH practitioner or COSH only? | COSH only and must be a DOLE accredited safety officer for at least 5 years. |

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| c. For the SLCC, can it be based on the PSA cost or just the As-Built cost? | The SLCC shall be based on the PSA cost. The value of the SLCC shall be adjusted to current prices using the PSA consumer price indices and must be at least fifty percent (50%) of the ABC to be bid.<br><br>Pursuant to Section 23.4.2.4 *"The bidder must have completed an SLCC that is similar to the contract to be bid, and whose value, adjusted to current prices using the PSA consumer price indices, must be at least fifty percent (50%) of the ABC to be bid."* |
| Question from Rhodium 688 Builders Inc.:<br><br>a. In our experience with the Caticlan airport, the cost of the design is Php 64 million, but the project cost is P2 billion. Is this qualified? | If Rhodium was the principal contractor for the completed Caticlan Airport Project, which is a design and build project, Rhodium may submit the Project as its SLCC. Provided that the Contract Amount is at least 50% of the ABC or Php136,870,000.00.<br><br>However, if Rhodium was merely subcontracted to do the design of the Project and the proposed Bill of Quantity of the project is PhP 2Billion, then it is compliant to the required One (1) Completed Design Project only. But Rhodium must still submit One (1) Completed Construction Project with at least Php 136,870,000.00 of the Total As-Built Cost.<br><br>**Similar Contract of Building Project at least Two (2) Storey:**<br><br>**Option 1:** One (1) Completed Design and Build Project for One (1) Contractor |

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| | of at least Php 136,870,000.00 of the Total As-Built Cost; or<br><br>**Option 2:** Combination of Two (2) projects for One (1) Contractor:<br>1. One (1) Completed Design Project with a Proposed BOQ amounting to at least Php 136,870,000.00 and<br>2. One (1) Completed Construction Project of at least Php 136,870,000.00 of the Total As-Built Cost; or<br><br>**Option 3:** Combination of Two (2) Projects for Two (2) Entities forming a JV, Consortium or Subcontract (in case the Design Portion is subcontracted):<br>1. One (1) Completed Design Project with a Proposed BOQ amounting to at least Php 136,870,000.00 and<br>2. One (1) Completed Construction Project for 1 Contractor of at least Php 136,870,000.00 of the Total As-Built Cost.<br><br>**Description of Building Project**:<br>• A single building with minimum Two (2) Storey; or<br>• Multiple buildings with atleast one (1) 2-Storey Building completed as one contract. |
| b. The construction has not yet been awarded, but we have submitted the conceptual estimate. | For compliance with the SLCC requirement, the project that should be submitted is one that has already been completed. Thus, the submission of a project that is yet to be awarded will not be compliant. |

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| | Please note that if the project is not yet completed or has just been awarded, then such project should be declared as part of the on-going project under Annex H of our Bid Documents, copy of which is herein attached as Annex "A". |
| Question from CHEC:<br><br>Regarding the SLCC, are these referring to domestic projects or including overseas projects? | You may submit a project done either in the Philippines or outside. |
| Questions from Palafox Associates via email<br><br>a. Request for a meeting<br><br>b. Submission of Comments via Email and Letter<br><br>c. Minutes of the Meeting | Please be informed that the BCDA is bound to comply with RA9184 and its RIRR in the conduct of the bidding process and thus, all activities and procedures are done publicly, with transparency and in the spirit of competitiveness. For this reason, we cannot grant the meeting being requested.<br><br>SBAC will issue a bid bulletin clarifying queries from the prospective bidders who attended the pre-bid conference and from those clarificatory questions received through email on or before 29 August 2023<br><br>SBAC shall issue the Minutes of the Meeting upon request. However, please note that all revisions or amendments in the bid documents are issued through a bid bulletin and are not reflected in the Minutes. |
| Questions from Phesco Inc:<br><br>a. We notice the list of key personnel required for the project. May we | No, the project requires different personnel for both the detailed design |

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| confirm if the bidder can nominate Only One Key Personnel for detailed design and construction phase? Example: One (1) Structural Engineer to be nominated both in design and construction phase | phase and the construction phase. So in your example, there should be 2 nominated structural engineers, one for the design and the other for the construction phase. |
| b. Site Dev't. Plan (As-built of Phase 1) for boundary limit of phase 2. Including no.s of trees that need to be cut or relocated. Lot Plan of Phase 2. | The Site Development Plan (As-Built) of NAS Phase 1 is in Annex B. There is no data for the number of trees that need to be cut. It is included in the responsibility of the bidder to determine the number of trees to be cut subject to the BCDA approval and according to the DENR existing laws and regulations. |
| c. Latest Topographic Survey | We can provide the previous Topographic Survey used for the construction of NAS-Phase 1. As an additional reference, the Site Development of NAS-Phase 1 with elevations will be provided as well. Please refer to Annex B. |
| d. Do you have an available Soil Test Result? | None. However, we encourage the winning bidder to conduct the soil test. |
| e. Zoning Building Restrictions | The Zoning Building Restrictions are attached as part of Annex B. |
| f. Possible extension of deadline / submission of Conceptual Design and Bids (45 days). | To provide the bidders ample time to prepare their bid proposals, we shall extend the deadline for the **submission of Bids for the Design and Build of the NAS P2** from 05 September 2023 to **15 September 2023 at 9:00 AM.**<br><br>Subsequently, the **Opening of the Bids** will be moved from 05 September 2023 to **15 September 2023, Friday, at 10:00 AM**. In effect, the schedule of |

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| | other procurement activities after the Opening of Bids will be moved accordingly. A separate bid bulletin will be issued for the changes on the dates of other procurement activities, per RIRR of RA 9184. |
| g. Do you have specifications of Equipment for Biomech Lab, ExPhys Lab, Sports Med Lab? | The Technical Specifications of the Sports Science and Sports Medicine Equipment will be attached here as part of Annex B. |
| h. As per TOR , is there any preferred brand for the transformer? | None. There is no preferred brand for the transformer. BCDA accepts any brand of transformer for as long as it complies with our minimum requirement and specifications. |
| i. What is the primary voltage coming from RMU needed for the transformer? | The primary voltage coming from the RMU needed for the transformer is **13.8 kilovolts.** |
| j. As per our secondary voltage, 400v/230 v , equipment w/ 230v three phase are not suitable with this voltage, 400v/230v? | For the secondary side of the transformer, it shall be 400V/230V, 3 phase, 4-Wire + Ground, 60Hz, for the equipment with 230v three phase. |
| k. What is the preferred type of generator , is it a stand by or continuous generator ? | The preferred type is the Stand-by Generator Set. |
| l. May we request for As-Built Drawings for the main tapping point of the following utilities such as Main Sewer Line, Storm Drainage Line and Water Supply Line? | As-Built Drawings are attached as part of Annex B. |
| m. To clarify, do you require a small Reverse Osmosis Plant / Water Treatment Plant for Drinking Purposes? | It is not required but the designer can propose. |

[redacted]

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| n. To clarify the type of system to be provided in irrigation, is it Manual or Automatic (Pop-up Sprinkler, Drip, Center Pivot, Lateral Type)? | Whether it is manual or automatic, the designer will decide on what will be the suitable irrigation system. |
| o. To clarify, does the project require a Rainwater Collection Tank for Irrigation? | Yes, a rainwater collection tank is required. |
| p. Preferred Brand of Equipment for Air Conditioner Pumps? | None. |
| Questions raised by Grundstein Construction and Development Corp.<br><br>a. In the Technical Proposal, do we need to submit the complete plans and specifications? (Architectural, Structural, Mechanical, Electrical, and Plumbing) | No, only architectural plans are required to be submitted as part of the technical proposal, to wit:<br><br>"Section IX. Checklist of Technical and Financial Documents<br><br>XXX<br>D) Preliminary Conceptual Design Plans in accordance with the degree of details specified in Part II. Technical Reference (TOR and MPSP), such as, but not limited to:<br>1. CAD 3D Rendered Perspective (Architectural Character)<br>2. Site Development Plan<br>3. Architectural Plans<br>A. Floor Plans<br>B. Elevations<br>C. Sections<br>D. BIM Platform (e.g., Autodesk Revit, etc.)" |

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| b. Do we need to have a Joint Venture license if we have a partner for the Design Phase or we can just submit a subcontractor agreement? | If you will declare your partner as subcontractor for the design portion, you must submit an **UNDERTAKING OF AGREEMENT TO ENTER INTO SUBCONTRACTING** (attached in Annex A as Annex J-1)<br><br>Please also note as stated in Section 7.1 of ITB:<br><br>XXX<br><br>7.1. The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criteria stated in ITB Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.<br><br>XXX |

**II. CLARIFICATION:**

1. The Statement of Availability of Leased/ Purchased Equipment should also have the signature of the lessor and the seller, accordingly.

2. Bidders must submit a duly accomplished **Detailed Cost Estimates (DCE)** instead of Detailed Unit Price Analyses as stated in Item II (Financial Component Envelope) of Section IX. Checklist of Technical and Financial Documents, whose correction is shown in the table below:

| II. Financial Component Envelope | |
|---|---|
| Current Version | Updated/Corrected Version |
| (l) Duly accomplished Detailed Unit Price Analyses; | (l) Duly accomplished **Detailed Cost Estimates (DCE);**<br><br>*DCE Form attached in Annex A |

## III. REVISED BIDDING SCHEDULE

The schedule below accordingly amends the schedule previously posted in the PhilGEPS and BCDA websites.

| Activity | FROM | TO |
|---|---|---|
| **Deadline for Request for Clarification** | 5:00 PM, 26 August 2023 | 5:00 PM, 5 September 2023 |
| **Deadline of Issuance of Bid Bulletin, if any** | 29 August 2023 | 8 September 2023 |
| **Deadline of Submission and Receipt of Bids** | 12:00 NN, 5 September 2023 | 09:00 AM, 15 September 2023 |
| **Opening of Bids** | 1:30 PM, 5 September 2023 | 10:00 AM, 15 September 2023 |

## IV. REMINDERS

1. Please be guided of the minimum requirements for the submission of the SINGLE LARGEST COMPLETED CONTRACT (SLCC), as follows:

   **A.** One (1) Completed Design and Build Project by one (1) contractor with a contract amount of at least PHP 136,870.000.00;

   **OR**

   **B.** Combination of two (2) projects by one (1) Contractor
      i. 1 Completed Design Project with a BOQ amounting to at least PHP136,870,000.00 **and**
      ii. 1 Completed Construction Project with a contract amount of at least PHP 136,870,000.00;

   **OR**

   **C.** Combination of 2 Projects for 2 entities forming a JV, Consortium or Subcontract *(in case the Design Portion is subcontracted)*
      i. 1 Completed Design Project with a BOQ amounting to at least Php 136,870,000.00 **and**
      ii. 1 Completed Construction Project for 1 Contractor with a contract amount of at least PHP 136,870,000.00.

For clarity, please refer to the attached bidding forms ***(Annex A)*** required for the submission of eligibility documents, technical, and financial components as well as conceptual plans ***( Annex B)*** for bidders' guidance.

Amendments made herein shall be considered an integral part of the Bidding Documents.

Issued on 29 August 2023.

[redacted]

**RICHARD BRIAN M. CEPE**
Chairperson, Special Bids and Awards for National Academy of Sports

BCDA Bases Conversion and Development Authority

SBAC – National Academy for Sports, Phase 2
NAS2023 – 0037

# *Bidding Forms*

*Annex "A"*

# Bid Form for the Procurement of Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City

***[shall be submitted with the Bid]***

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## BID FORM

Date : _____

*To:* **BCDA Special Bids and Awards Committee for NAS**

Having examined the Philippine Bidding Documents (PBDs) including the Supplemental or Bid Bulletin Numbers ***[insert numbers]***, the receipt of which is hereby duly acknowledged, we, the undersigned, declare that:

a. We have no reservation to the PBDs, including the Supplemental or Bid Bulletins, for the Procurement Project: ***Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City***

b. We offer to execute the Works for this Contract in accordance with the PBDs;

c. The total price of our Bid in words and figures, excluding any discounts offered below is: ***[total bid price in words]*** and ***[total bid price in figures]***;

d. The discounts offered and the methodology for their application are: ***[insert percentage or amount] and [information for their application]***;

e. The total bid price includes the cost of all taxes, such as, but not limited to: (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties, which are itemized herein and reflected in the detailed estimates,

f. Our Bid shall be valid within the period stated in the PBDs, and it shall remain binding upon us at any time before the expiration of that period;

g. If our Bid is accepted, we commit to obtain a Performance Security in the amount of Thirty ***percent (30%)*** of the Contract Price for the due performance of the Contract;

h. We are not participating, as Bidders, in more than one Bid in this bidding process, other than alternative offers in accordance with the Bidding Documents;

i. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between

us, until a formal Contract is prepared and executed; and

j. We understand that you are not bound to accept the Lowest Calculated Bid or any other Bid that you may receive.

k. We likewise certify/confirm that the undersigned, is the duly authorized representative of the bidder, and granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for the **Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

l. We acknowledge that failure to sign each and every page of this Bid Form, including the Bill of Quantities, shall be a ground for the rejection of our bid.

Name: _____

Legal Capacity: _____

Signature: _____

Duly authorized to sign the Bid for and behalf of: _____

Date: _____

*Annex "B"*

**STATEMENT OF AVAILABILITY OF KEY PERSONNEL**

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

*[Date of Issuance]*

**To: BCDA Special Bids and Awards Committee for NAS**

In compliance with the requirements of the BCDA Special Bids and Awards Committee for NAS for the bidding of the Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City ("the Project"), we certify that ***[Name of the Bidder]*** has in its employ the following key personnel who will be engaged for the construction of the said Project:

1. Detailed Design Phase

| **Position** | **Name** |
|---|---|
| Project Design Manager | |
| Structural Engineer | |
| Geodetic Engineer | |
| Professional Electrical Engineer | |
| Professional Mechanical Engineer | |
| Drainage Engineer | |
| Materials Engineer II | |
| Quantity Surveyor | |
| Architect | |
| BIM Specialist | |

2. Construction Phase

| **Position** | **Name** |
|---|---|
| Project Manager | |
| Deputy Project Manager | |

| | |
|---|---|
| Structural Engineer | |
| Geodetic Engineer | |
| Electrical Engineer | |
| Mechanical Engineer | |
| Drainage Engineer | |
| Materials Engineer II | |
| Quantity Surveyor | |
| Architect | |
| BIM Specialist | |
| Health and Safety Officer | |

Very truly yours,
***[Name of Authorized Representative]***
***[Name of Bidder]***

***Annex "C-1"***

**STATEMENT OF AVAILABILITY OF OWNED EQUIPMENT BY THE BIDDER**

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

*[Date of Issuance]*

**For: The BCDA Special Bids and Awards Committee for NAS**

In compliance with the requirements of the BCDA Special Bids and Awards Committee for NAS for the bidding of the Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City ("the Project"), we hereby certify the availability of the following equipment that is owned by :

| Equipment | Brand/Model | Capacity | Registered Owner |
|---|---|---|---|
| 1. | | | |
| 2. | | | |

| | | | |
|---|---|---|---|
| 3. | | | |
| 4. | | | |

Very truly yours,

***[Name of Bidder]***
***[Position]***
***[Name of Company]***

*Annex "C-2"*

**STATEMENT OF AVAILABILITY OF LEASED EQUIPMENT**

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

*[Date of Issuance]*

**For: The BCDA Special Bids and Awards Committee for NAS**

In compliance with the requirements of the BCDA Special Bids and Awards Committee for NAS for the bidding of the Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City ("the Project"), we hereby certify the availability of the following equipment that is under lease agreement between ***[Name of Lessor]*** *and* ***[Name of Bidder]:***

| Equipment | Brand/Model | Capacity |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |

Very truly yours,

***[Name of Equipment Lessor]***
***[Position]***
***[Name of Company]***

*Annex "C-3"*

**STATEMENT OF AVAILABILITY OF EQUIPMENT**
**UNDER PURCHASE AGREEMENT**

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

*[Date of Issuance]*

**To: BCDA Special Bids and Awards Committee for NAS**

In compliance with the requirements of the BCDA Special Bids and Awards Committee for NAS for the bidding of the Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City ("the Project"), we hereby certify the availability of the following equipment that is under purchase agreement between ***[Name of Vendor]*** and ***[Name of Bidder]***:

| Equipment | Brand/Model | Capacity |
|---|---|---|
| | | |
| | | |
| | | |

Very truly yours,

***[Name of Equipment Vendor]***

***[Position]***

***[Name of Company]***

*Annex "D-1"*

**LIST OF KEY TECHNICAL PERSONNEL TO BE ASSIGNED TO THE PROJECT**
**DETAILED DESIGN PHASE**

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

Bidder : _____

| | Project Design Manager | Structural Engineer | Geodetic Engineer | Electrical Engineer | Mechanical Engineer | Drainage Engineer | Materials Engineer II | Quantity Surveyor | Architect | BIM Specialist |
|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | | | | | | | | | | |
| **1. Date of Birth** | | | | | | | | | | |
| **2. Educational Attainment** | | | | | | | | | | |
| **3. PRC License No./ Accreditation No. from DOLE** *(for the Safety and Health Officer)/* ***DPWH Accreditation No.*** *(for the Materials Engineer II)* | | | | | | | | | | |
| **4. Years of Experience in the Nominated Position** | | | | | | | | | | |

**Note:**

A. This List must be supported by the following documents:

1. Individual CVs to show proof of the following:
   a. that the proposed personnel meets the required profession and relative experience;
   b. list of projects handled with the corresponding position and its inclusive years of experience (e.g., Construction of Road, Project Manager, 2012-2017)
2. Photocopy of PRC Licenses/Accreditation from DOLE or DPWH.

B. The details provided above shall be further validated with the submitted CVs. In case of discrepancies, the CV shall prevail.

Submitted by : _____
*(Printed Name & Signature of Authorized Representative)*

Date : _____

*Annex "D-2"*

**LIST OF KEY TECHNICAL PERSONNEL TO BE ASSIGNED TO THE PROJECT**
**CONSTRUCTION PHASE**

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

Bidder : _____

| | Project Manager | Deputy Project Manager | Structural Engineer | Geodetic Engineer | Electrical Engineer | Mechanical Engineer | Drainage Engineer | Materials Engineer II | Quantity Surveyor | Architect | BIM Specialist | Health and Safety Officer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | | | | | | | | | | | | |
| **1. Date of Birth** | | | | | | | | | | | | |
| **2. Educational Attainment** | | | | | | | | | | | | |
| **3. PRC License No./ Accreditation No. from DOLE** *(for the Safety and Health Officer)/* ***DPWH Accreditation No.*** *(for the Materials Engineer II)* | | | | | | | | | | | | |
| **4. Years of Experience in the Nominated Position** | | | | | | | | | | | | |

**Note:**

C. This List must be supported by the following documents:

1. Individual CVs to show proof of the following:
   a. that the proposed personnel meets the required profession and relative experience;
   b. list of projects handled with the corresponding position and its inclusive years of experience (e.g., Construction of Road, Project Manager, 2012-2017)
2. Photocopy of PRC Licenses/Accreditation from DOLE or DPWH.

D. The details provided above shall be further validated with the submitted CVs. In case of discrepancies, the CV shall prevail.

Submitted by : _____
*(Printed Name & Signature of Authorized Representative)*

Date : _____

**Annex "E-1"**

## KEY TECHNICAL PERSONNEL – DETAILED DESIGN PHASE
## (FORMAT OF CURRICULUM VITAE)

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

Proposed Position: _____

Name of Firm/Entity/JV/Consortium: _____

Name of Staff: _____

Profession: _____

Date of Birth: _____Nationality: _____

Years with Firm/Entity: _____ years, from [mm/dd/yy] to [mm/dd/yy]

Current Position in the Firm:_____

Membership in Professional Societies: _____

Detailed Tasks Assigned: _____

### Education:

[*Summarize college/university and other specialized education of staff members, giving names of schools, dates attended, and degrees obtained. Use about one quarter of a page.*]

| College/University | Degree/Title Obtained | Inclusive Dates | |
|---|---|---|---|
| | | From (MM/DD/YY) | To (MM/DD/YY) |
| | | | |
| | | | |

* Complete the details of the inclusive dates (month, day, and year)

### Memberships in Professional Regulatory Body

*[Give an outline of all memberships in PRC using the matrix below]*

| Name of Profession | Name of Professional Regulatory Body *(please do not abbreviate)* | Date of Registration (MM/DD/YYYY) | License/Registration Number | Validity Date (MM/DD/YYYY) |
|---|---|---|---|---|
| | | | | |
| | | | | |

* Complete the details of the inclusive dates (month, day and year)

**Relevant Work Experience:**

*[Provide outline of projects undertaken using the matrix below]*

| **Project Title** | **Project Description** | **Project Owner** | **Position and Description of the Nature of Work/ Engagement in the project** | **Start Date** (MM/DD/YYYY) | **End Date** (MM/DD/YYYY) |
|---|---|---|---|---|---|
| (latest/most recent) | | | | | |
| | | | | | |
| (previous) | | | | | |

*Rank from previous to latest/most recent project

* Complete the details of the inclusive dates (month, day, and year)

**On-Going Projects**

*[Provide outline of on-going projects using the matrix below]*

| **Project Title** | **Project Description** | **Project Owner** | **Position and Description of the Nature of Work/ Engagement in the project** | **Start Date** (MM/DD/YYYY) | **End Date** (MM/DD/YYYY) |
|---|---|---|---|---|---|
| (latest/most recent) | | | | | |
| | | | | | |
| (previous) | | | | | |

*Rank from previous to latest/most recent on-going project

* Complete the details of the inclusive dates (month, day, and year)

---

## Certification:

I, *[full name of nominated key technical personnel],* certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

## Commitment:

I also commit to work for the Project as *[proposed position]* and assume the post of *[proposed position]* within seven (7) days upon receipt of the Notice to Proceed by the *[Name of Bidder]*.

_____Date: _____

*[Signature over printed name of nominated key technical personnel]*

_____Date: _____

*[Signature over printed name of authorized representative]*

**Annex "E-2"**

## KEY TECHNICAL PERSONNEL – CONSTRUCTION PHASE (FORMAT OF CURRICULUM VITAE)

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

Proposed Position: _____

Name of Firm/Entity/JV/Consortium: _____

Name of Staff: _____

Profession: _____

Date of Birth: _____Nationality: _____

Years with Firm/Entity: _____ years, from [mm/dd/yy] to [mm/dd/yy]

Current Position in the Firm:_____

Membership in Professional Societies: _____

Detailed Tasks Assigned: _____

### Education:

[*Summarize college/university and other specialized education of staff members, giving names of schools, dates attended, and degrees obtained. Use about one quarter of a page.*]

| College/University | Degree/Title Obtained | Inclusive Dates | |
|---|---|---|---|
| | | From (MM/DD/YY) | To (MM/DD/YY) |
| | | | |
| | | | |

* Complete the details of the inclusive dates (month, day, and year)

### Memberships in Professional Regulatory Body

*[Give an outline of all memberships in PRC using the matrix below]*

| Name of Profession | Name of Professional Regulatory Body *(please do not abbreviate)* | Date of Registration (MM/DD/YYYY) | License/Registration Number | Validity Date (MM/DD/YYYY) |
|---|---|---|---|---|
| | | | | |
| | | | | |

* Complete the details of the inclusive dates (month, day and year)

**Relevant Work Experience:**

*[Provide outline of projects undertaken using the matrix below]*

| **Project Title** | **Project Description** | **Project Owner** | **Position and Description of the Nature of Work/ Engagement in the project** | **Start Date** (MM/DD/YYYY) | **End Date** (MM/DD/YYYY) |
|---|---|---|---|---|---|
| (latest/most recent) | | | | | |
| | | | | | |
| (previous) | | | | | |

*Rank from previous to latest/most recent project

* Complete the details of the inclusive dates (month, day, and year)

**On-Going Projects**

*[Provide outline of on-going projects using the matrix below]*

| **Project Title** | **Project Description** | **Project Owner** | **Position and Description of the Nature of Work/ Engagement in the project** | **Start Date** (MM/DD/YYYY) | **End Date** (MM/DD/YYYY) |
|---|---|---|---|---|---|
| (latest/most recent) | | | | | |
| | | | | | |
| (previous) | | | | | |

*Rank from previous to latest/most recent on-going project

* Complete the details of the inclusive dates (month, day, and year)

---

## Certification:

I, *[full name of nominated key technical personnel],* certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

## Commitment:

I also commit to work for the Project as *[proposed position]* and assume the post of *[proposed position]* within seven (7) days upon receipt of the Notice to Proceed by the *[Name of Bidder]*.

_____ Date: _____

*[Signature over printed name of nominated key technical personnel]*

_____Date: _____

*[Signature over printed name of authorized representative]*

**Annex "F"**

**LIST OF EQUIPMENT OWNED OR LEASED AND/OR UNDER PURCHASE AGREEMENT, PLEDGED TO THE PROPOSED CONTRACT**

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

| Description | Model/Year | Capacity/ Performance/Size | Plate No. | Motor No./ Body No./Chasis No. | Location | Proof of Ownership/ Lease/Purchase |
|---|---|---|---|---|---|---|
| A. Owned[1] | | | | | | |
| i. | | | | | | |
| ii. | | | | | | |
| iii. | | | | | | |
| B. Leased[2] | | | | | | |
| i. | | | | | | |
| ii. | | | | | | |
| iii. | | | | | | |
| C. Under Purchase Agreement[3] | | | | | | |
| i. | | | | | | |
| ii. | | | | | | |
| iii. | | | | | | |

**[1] Please refer to BDS Section 10.5a for the list of acceptable supporting documents for owned equipment**
**[2] Please refer to BDS Section 10.5b for the list of acceptable supporting documents for leased equipment**
**[3] Please refer to BDS Section 10.5c for the list of acceptable supporting documents for equipment under purchase agreement**

Submitted by : _____
*(Printed Name & Signature of Authorized Representative)*

Date : _____

**Annex "G"**

## STATEMENT OF SINGLE LARGEST COMPLETED CONTRACT (SLCC)

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

Date: _____

**For: The BCDA Special Bids and Awards Committee for NAS**

In compliance with the eligibility requirements for the bidding of Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City, this is to certify that ***[name and complete address of Bidder]*** has the following completed government and private contracts:

| Tab No. | Name of Contract | Start Date of Contract | Contract Duration | Project Owner's Name and Address | Contractor's Role (whether sole contractor, subcontractor or partner in a JV)<br>if subcontractor, indicate the total amount subcontracted<br>if Joint Venture, indicate the total amount of participation in the JV | Total Contract Value at Award (in Php) | Date of Completion | Total Contract Value at Completion (in Php) | CPES Rating, if applicable |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Yours sincerely,

[Signature over printed name of Authorized Representative]
[Title]
[Name of Firm]

**Note:** This statement shall be supported by contracts, certificate of completion or owner's final acceptance and CPES rating sheets, if applicable. These supporting documents shall be numbered and tabbed in the same sequence as the list of contracts appears in this statement.

**Annex "H"**

## STATEMENT OF ALL ON-GOING GOVERNMENT AND PRIVATE CONTRACTS, INCLUDING CONTRACTS AWARDED BUT NOT YET STARTED, IF ANY

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

Date: _____

**For: The BCDA Special Bids and Awards Committee for NAS**

In compliance with the eligibility requirements for the bidding of **Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City,** this is to certify that ***[name and complete address of Bidder]*** has the following on-going government and private contracts. [Including contracts awarded but not yet started]:

| Tab No. | Name of Contract | Date of Contract | Contract Duration | Owner's Name and Address | Nature of Work | Contractor's Role (whether sole contractor, subcontractor or partner in a JV)<br>if subcontractor, indicate the total amount subcontracted<br>if Joint Venture, indicate the total amount of participation in the JV | Total Contract Value at Award (in PhP) | [Estimated] Date of Completion | Total Contract Value at Completion, if applicable (in PhP) | Percentages of Planned & Actual Accomplishment, if applicable | Value of Outstanding Works, if applicable (in Php) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | **TOTAL AMOUNT:** | | | | | |

Yours sincerely,

[Signature over printed name of Authorized Representative]
[Title]
[Name of Firm]

**Note:** This statement shall be supported by contracts or notices of award or notices to proceed issued by the owners. The original copies of these supporting documents shall be presented during the conduct of Post-Qualification.

**Annex "I"**

**OMNIBUS SWORN STATEMENT**

---

REPUBLIC OF THE PHILIPPINES )
CITY/MUNICIPALITY OF _____ ) S.S.

**AFFIDAVIT**

I, *[Name of Affiant]*, of legal age, *[Civil Status]*, *[Nationality]*, and residing at *[Address of Affiant]*, after having been duly sworn in accordance with law, do hereby depose and state that:

1. ***Select one, delete the other:***

   *If a sole proprietorship:* I am the sole proprietor or authorized representative of *[Name of Bidder]* with office address at *[address of Bidder]*;

   *If a partnership, corporation, cooperative, or joint venture:* I am the duly authorized and designated representative of *[Name of Bidder]* with office address at *[address of Bidder]*;

2. ***Select one, delete the other:***

   *If a sole proprietorship:* As the owner and sole proprietor or authorized representative of *[Name of Bidder]*, I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for *[Name of the Project]* of the *[Name of the Procuring Entity] [insert "as shown in the attached duly notarized Special Power of Attorney" for the authorized representative]*;

   *If a partnership, corporation, cooperative, or joint venture:* I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for *[Name of the Project]* of the *[Name of the Procuring Entity]*, accompanied by the duly notarized Special Power of Attorney, Board/Partnership Resolution, or Secretary's Certificate, whichever is applicable;

3. *[Name of Bidder]* is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board;

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. *[Name of Bidder]* is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. ***Select one, delete the rest:***

   *If a sole proprietorship:* The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Special Bids and Awards Committee (SBAC), the Technical Working Group, and the SBAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

   *If a partnership or cooperative:* None of the officers and members of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Special Bids and Awards Committee (SBAC), the Technical Working Group, and the SBAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

   *If a corporation or joint venture:* None of the officers, directors, and controlling stockholders of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Special Bids and Awards Committee (SBAC), the Technical Working Group, and the SBAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. *[Name of Bidder]* complies with existing labor laws and standards; and

8. *[Name of Bidder]* is aware of and has undertaken the following responsibilities as a Bidder:

   a) Carefully examine all of the Bidding Documents;
   b) Acknowledge all conditions, local or otherwise, affecting the implementation of the Contract;
   c) Made an estimate of the facilities available and needed for the contract to be bid, if any; and
   d) Inquire or secure Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the

Revised Penal Code.

IN WITNESS WHEREOF, I have hereunto set my hand this __ day of ___, 20__ at _____, Philippines.

_____
Bidder's Representative/Authorized Signatory

**SUBSCRIBED AND SWORN** to before me this ___ day of *[month] [year]* at *[place of execution],* Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her [insert type of government identification card used], with his/her photograph and signature appearing thereon, with no. _____ and his/her Community Tax Certificate No. _____ issued on ____ at _____.

Witness my hand and seal this ___ day of *[month] [year].*

**NAME OF NOTARY PUBLIC**
Serial No. of Commission _____
Notary Public for _____ until _____
Roll of Attorneys No. _____
PTR No. __, *[date issued], [place issued]*
IBP No. __, *[date issued], [place issued]*
MCLE No. __

Doc. No. ___
Page No. ___
Book No. ___
Series of ____

**Annex "J"**

## JOINT VENTURE/ CONSORTIUM AGREEMENT

**KNOW ALL MEN BY THESE PRESENTS**:

This **JOINT VENTURE/ CONSORTIUM AGREEMENT** (hereinafter referred to as the "Agreement"), entered into this _____ day of _____ 20__ at _____ City, Philippines by and among:

_____**.** a domestic corporation duly organized, registered and existing under and by virtue of the laws of the Republic of the Philippines, with office address at _____, represented by its _____, _____, hereinafter referred to as **"**_____";
- and -

_____**.** a domestic corporation duly organized, registered and existing under and by virtue of the laws of the Republic of the Philippines, with office address at _____, represented by its _____, _____**,** hereinafter referred to as "_____";

- and -

_____ a foreign corporation organized and existing under and by virtue of the laws of _____, represented by its _____, _____**,** hereinafter referred to as "_____";

(Henceforth collectively referred to as the "**Parties**"

**WITNESSETH: That**

**WHEREAS,** BCDA has recently published an Invitation to Apply for Eligibility and to Bid for the Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City;

**WHEREAS,** the parties have agreed to pool their resources together to form the "_____Joint Venture/Consortium", hereinafter referred to as the Joint Venture/Consortium, under the laws of the Philippines, for the purpose of participating in the abovementioned procurement of BCDA;

**NOW, THEREFORE,** for and in consideration of the foregoing premises and the covenants hereto set forth, the Parties have agreed as follows:

## ARTICLE I

## ORGANIZATION OF THE JOINT VENTURE/CONSORTIUM

SECTION 1. Formation – The Parties do hereby agree and bind themselves to establish, form and organize a Joint Venture pursuant to the laws of the Republic of the Philippines, in order for the JV to carry on the purposes and objectives for which it is created;

SECTION 2. Name – The name and style under which the JV/Consortium shall be conducted is "_____";

SECTION 3. Principal Place of Business – The JV/Consortium shall maintain its principal place of business at _____ ;

SECTION 4. Preparation and Documentation – The Parties shall secure and/or execute such certifications, documents, deeds and instruments as may be required by the laws of the Republic of the Philippines for the realization of the JV/Consortium and in compliance with the Project. Further, they shall do all other acts and things requisite for the continuation of the JV/Consortium pursuant to applicable laws;

SECTION 5. The Joint Venture/Consortium shall be represented by the _____ in all biddings, related procurement transactions and other official dealings that it shall enter into with BCDA and third parties, such transactions to include, among others, the submission of eligibility documents, bids, registration documents obtaining bonds, performing the principal contract in the event that the contract is awarded in favor of the Joint Venture/Consortium, receipt of payment for goods delivered, and similar and related activities.

SECTION 6. The period of the Joint Venture/Consortium shall begin upon execution of this Agreement and shall continue until the complete performance of its contractual obligations to BCDA, as described in Article II hereof, or upon its termination for material breach of any term or condition of this Agreement, by service of a written statement in English on the other Party, not less than 90 days prior to the intended date termination

## ARTICLE II
## PURPOSE

SECTION 1. The primary purpose of the Joint Venture/Consortium is to participate in the public bidding to be conducted by the BCDA Special Bids and Awards Committee for the Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City.

SECTION 2. If the above-described contract/s is/are awarded to the Joint Venture/Consortium, the Joint Venture/Consortium shall undertake the performance thereof to BCDA, and such other incidental activities necessary for the completion of its contractual obligations.

## ARTICLE III
## SOLIDARY LIABILITY OF THE PARTIES

SECTION 1. In the performance of the contract/s that may be awarded to the Joint Venture/Consortium by BCDA, and all other related activities/obligations, as described in Article II hereof, the Parties bind themselves jointly and solidarily, in the concept of solidarily debtors, subject to the right of reimbursement, as provided in the relevant provisions of the Civil Code of the Philippines.

## ARTICLE IV
## CONTRIBUTION AND OTHER ARRANGEMENTS

SECTION 1. Contribution – The Parties shall contribute the amount of _____ (Php ) to support the financial requirements of the Joint Venture/Consortium, in the following proportion:

| | | |
|---|---|---|
| A. | - | P .00 |
| B. | - | P .00 |
| TOTAL | | P .00 |

Additional contributions to the Joint Venture/Consortium shall be made as may be required for contract implementation. In addition, ____ shall contribute any labor and contract management requirements.

SECTION 2. Profit Sharing – The share of the Parties to the JV/Consortium from any profit derived or obtained from the implementation and execution of the Project shall be distributed pro rata to each, in accordance with the contribution and resources each has provided to the JV/Consortium;

SECTION 3. Liquidation and Distributions – Any sum remaining after deducting from the total of all moneys or benefits received for the performance of the contract, all costs incurred by the JV/Consortium after award of the contract for the Project pursuant to the accounting practices established for the JV/Consortium, shall be distributed in accordance with the relative balances in the accounts of each Party pursuant to Sec.1 of this Article upon completion, final accounting, termination and liquidation of the JV/Consortium. In the event of liquidation and termination of JV/Consortium, and after taking into account the shares of the Parties in all income, gain, deductions, expenses, and losses, should the account of a Party

contain a negative balance, such Party shall contribute cash to the JV/Consortium sufficient to restore the said balance to zero;

SECTION 4. Sharing of Burden of a Net Loss – In case a net loss is incurred, additional contributions shall be made by the Parties in accordance with their respective shares.

## ARTICLE V
## *MISCELLANEOUS PROVISIONS*

SECTION 1. The provisions of the Instructions to Bidders, Supplemental Bid Bulletin, and other bidding documents issued by BCDA in relation to the contract described in Article II hereof, shall be deemed incorporated in this Agreement and made an integral part thereof.

SECTION 2. This Agreement shall be binding upon and inure to the benefit of the Parties and their respective successors and assigns.

SECTION 3. The Parties herein are duly represented by their authorized officers.

SECTION 4. Governing Law - This Agreement shall be governed by and construed according to the laws of the Republic of the Philippines. Venue of any court action arising from this Agreement shall be exclusively laid before the proper court of the _____, Philippines.

IN WITNESS WHEREOF, the parties have set their hands and affixed their signatures on the date and place first above-stated.

_____ _____
_____ _____

_____
_____

Signed in the Presence of:

_____
_____

## ACKNOWLEDGMENT

REPUBLIC OF THE PHILIPPINES )
CITY/MUNICIPALITY OF _____) S.S.
PROVINCE OF (in the case of Municipality)

BEFORE ME, a Notary Public for and in the City/Municipality of ___(indicate also the Province in the case of Municipality___, this _____ day of __(month & year)__ personally appeared the following:

| Name | ID Name, Number and Validity Date |
|---|---|

Known to me and to me known to be the same persons who executed the foregoing instrument and they acknowledge to me that the same is their free and voluntary act and deed and that of the corporation(s) they represent.

This instrument refers to a Joint Venture/Consortium Agreement consisting of _____ pages, including the page on which this Acknowledgement is written, and signed by the parties and their instrumental witnesses.

WITNESS MY HAND AND NOTARIAL SEAL on the place and on the date first above written.

_____
(Notary Public)

Until
PTR No.
Date
Place
TIN
IBP

Doc. No. ;
Page No. ;
Book No. ;
Series of 20__.

***Note**: The competent evidence of identity for Notary shall comply with Sec. 12 (a), Rule II of the 2004 Rules on Notarial Practice. "Sec. 12. Competent Evidence of Identity – The phrase "competent evidence of identity" refers to the identification of an individual based on at least one current identification document issued by an official agency bearing the photograph and signature of the individual, such as but not limited to, passport, driver's license, Professional Regulations Commission ID, National Bureau of Investigation clearance, police clearance, postal ID, voter's ID, Barangay certification, Government Service and Insurance System (GSIS) e-card, Social Security System (SSS) card, Philhealth card, senior citizen card, Overseas Workers Welfare Administration (OWWA) ID, OFW ID, seaman's book, alien certificate of registration/immigrant certificate of registration, government office ID, certification from the National Council for the Welfare of Disabled Persons (NCWDP), Department of Social Welfare and Development (DSWD) certification;*

**Annex "J-1"**

## UNDERTAKING OF AGREEMENT TO ENTER INTO SUBCONTRACTING

This **UNDERTAKING OF AGREEMENT TO ENTER INTO SUBCONTRACTING**, executed by _____, a sole proprietorship/partnership/corporation duly organized and existing under and by virtue of the laws of the Philippines, with offices located at _____, representative herein by its _____, _____ hereafter referred to as "_____".

-and-

_____ a sole proprietorship/partnership/corporation duly organized and existing under and by virtue of the laws of the Philippines, with offices located at _____, representative herein by its _____, _____ hereafter referred to as "_____";

For submission to the Special Bids and Awards Committee (SBAC) of the Bases Conversion and Development Authority (BCDA), **pursuant to Item (9) (9.2) (ii) (b) of Annex G (Guidelines for the Procurement and Implementation of Contracts for Design and Build Infrastructure Projects) of the 2016 Revised Implementing Rules and Regulations (RIRR) of Republic Act (RA) No. 9184**.

WITNESSETH that:

**WHEREAS**, the Parties desire to participate as a Contractor and Subcontracting Entity in the public bidding that will be conducted by BCDA pursuant to Republic Act No. 9184 and 2016 RIRR, with the following particulars:

| | |
|---|---|
| Name/Title of Procurement Project | |
| Approved Budget for the Contract | |

**NOW THEREFORE**, in consideration of the foregoing, the Parties undertake to enter into a **SUBCONTRACTING** and sign a **SUBCONTRACTING Agreement** relative to their SUBCONTRACTING cooperation for this project, in the event that the bid is successful, furnishing the BCDA-SBAC a duly signed and notarized copy thereof **within ten (10) calendar days** from receipt of Notice from the BCDA-SBAC that the bid has the lowest calculated responsive bid or highest rated responsive bid (as case may be).

For purposes of this bid project, and unless modified by the terms of the SUBCONTRACTING Agreement, the following party shall be the authorized representative of the SUBCONTRACTING

(Name of Company)

_____

Authorized Representative of the SUBCONTRACTING AGREEMENT: (per attached Secretary's Certificate)

_____

Name

_____

Designation

That furthermore, the parties agree to be bound jointly and severally under the said SUBCONTRACTING Agreement;

That finally, failure to enter into the SUBCONTRACTING and/or sign the SUBCONTRACTING Agreement for any reason after the Notice of Award (NOA) has been issued by shall be a ground for non-issuance of BCDA of the Notice to Proceed (NTP), forfeiture of the bid security and such other administrative and/or civil liabilities as may be imposed by BCDA under the provisions of R.A. No. 9184 and its 2016 RIRR, without any liability on the part of BCDA.

This undertaking shall form an integral part of the Eligibility Documents for the above-mentioned project.

**IN WITNESS THEREOF**, the Parties have signed this Undertaking on the date first above-written.

_____

Contractor's Representative/Authorized Signatory

_____

SUBCONTRACTING Entity's Representative/Authorized Signatory

**Annex "K"**

**CONTRACTOR'S LETTERHEAD**

(PROFORMA LETTER FOR WITHDRAWAL OF DOCUMENTS)

_____
Date

BCDA Special Bids and Awards Committee for NAS

This has reference to Public Bidding No. _____ for _____(Name of Project)_____. Name of Company)_____ respectfully requests for the following:

( ) Withdraw of Bid Submissions
( ) Refund of Bid Security
(Attached is a photocopy of BCDA Official Receipt)
( ) Cancellation of Credit Line Certificate

It is understood that _____waives its right to file any motion for reconsideration and/pr protest in connection with the above-cited Public Bidding Project.

Thank you.

Very truly yours,

_____
**Authorized Representative**

**Annex "L"**

## FORM OF PERFORMANCE SECURITY (BANK GUARANTEE)

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

---

To : **Bases Conversion and Development Authority**

WHEREAS, _____*(Name and Address of Contractor)*_____ (hereinafter called "the Contractor") has undertaken, in pursuance of Purchase Order No. _____ dated _____ to execute *(Name of Contract and Brief Description)* (hereinafter called "the Contract");

AND WHEREAS, it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS, we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE, we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of *[Amount of Guarantee]* proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of *[Amount of Guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until the date of issue of the Final Acceptance [Inspection, & Certification of Acceptance Report (I.C.A.R.)].

SIGNATURE AND SEAL OF THE GUARANTOR
NAME OF BANK
ADDRESS

DATE

**Annex "M"**

**REPUBLIC OF THE PHILIPPINES )**
**CITY OF _____ ) S.S.**
**x----------x**

## BID SECURING DECLARATION

**Design and Build of the National Academy of Sports (NAS) -Phase 2 at New Clark City**

To: **BCDA Special Bids and Awards Committee for NAS**

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.

2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1 (f), of the IRR of RA 9184; without prejudice to other legal action the government may undertake:

3. I/We understand that this Bid-Securing Declaration shall cease to be valid on the following circumstances:

   (a) Upon expiration of the bid validity period, or any extension thereof pursuant to your request;

   (b) I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right;

   (c) I am/we are declared as the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

**IN WITNESS WHEREOF**, I/We have hereunto set my/our hand/s this ____ day of *[month] [year]* at *[place of execution]*.

***[Insert NAME OF BIDDER'S AUTHORIZED REPRESENTATIVE]***
***[Insert signatory's legal capacity]***

Affiant

**SUBSCRIBED AND SWORN** to before me this __ day of *[month] [year]* at *[place of execution]*, Philippines. Affiant/s is/are personally known to me and was/were identified by me through competent evidence of identity as defined in the 2004 Rules on Notarial Practice (A.M. No. 02-8-13-SC). Affiant/s exhibited to me his/her *[insert type of government identification card used]*, with his/her photograph and signature appearing thereon, with no. _____.

Witness my hand and seal this ___ day of *[month] [year]*.

**NAME OF NOTARY PUBLIC**
Serial No. of Commission _____
Notary Public for _____ until _____
Roll of Attorneys No. _____
PTR No. __, *[date issued], [place issued]*
IBP No. __, *[date issued], [place issued]*
Doc. No. ___
Page No. ___
Book No. ___
Series of ____.

**Annex "N"**

**Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City**

THE PUBLIC IS INFORMED:

This **Contract** is executed between:

**BASES CONVERSION AND DEVELOPMENT AUTHORITY**, a government instrumentality vested with corporate powers, created by virtue of Republic Act No. 7227, as amended, with principal office address at the BCDA Corporate Center, 2nd Floor Bonifacio Technology Center, 31st Street corner 2nd Avenue, Bonifacio Global City, Taguig City, represented herein by its President and CEO, _____, who is duly authorized for this purpose as evidenced by the Secretary's Certificate dated _____, a certified true copy of which is hereto attached as **Annex "A"** and made an integral part hereof, hereinafter referred to as "**BCDA**";

- and –

_____, a private corporation duly organized and existing under the laws of the Republic of the Philippines, with office address at _____,
represented herein by its _____, _____, who is duly authorized for this purpose as evidenced by a Secretary's Certificate dated _____, a copy of which is hereto attached as **Annex "B**", hereinafter referred to as **"Contractor".**

Individually referred to as "Party" and collectively as "Parties",

**ANTECEDENTS**

BCDA is desirous that the Contractor execute the Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City (hereinafter called "the Works") and BCDA has accepted the Bid for _____ by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

ACCORDINGLY, the Parties agree as follows:

3. In this Contract, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

4. The following documents as required by the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184 shall be deemed to form and be read and construed as part of this Contract, vis.:

    a. Philippine Bidding Documents (PBDs);

        i. Drawings/Plans;

ii. Specifications;
iii. Bill of Quantities;
iv. General and Special Conditions of Contract;
v. Supplemental or Bid Bulletins, if any;

b. Winning bidder's bid, including the Eligibility requirements, Technical and Financial Proposals, and all other documents or statements submitted;

Bid form, including all the documents/statements contained in the Bidder's bidding envelopes, as annexes, and all other documents submitted (e.g. Bidder's response to request for clarifications on the bid), including corrections to the bid, if any, resulting from the BCDA's bid evaluation;

c. Performance Security;

d. Notice of Award of Contract and the Bidder's conforme thereto; and

e. Other contract documents that may be required by existing laws and/or the Procuring Entity concerned in the PBDs. **Winning bidder agrees that additional contract documents or information prescribed by the GPPB that are subsequently required for submission after the contract execution such as the Notice to Proceed, Variation Orders, and Warranty Security, shall likewise form part of the Contract**.

3. In consideration for the sum of _____ or such other sums as may be ascertained, the Contractor agrees to execute the Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City in accordance with his/her/its Bid.

4. The BCDA agrees to pay the above-mentioned sum in accordance with the terms of the Bidding.

5. Any amendment, modification or additional terms and conditions to this Contract shall be made in writing and executed with the same formalities hereof.

**SIGNED BY THE PARTIES** on _____ in Taguig City, Philippines.

**BASES CONVERSION AND DEVELOPMENT AUTHORITY**

By:

_____

President and CEO

_____

Signed in the presence of:

Executive Vice President and COO

**ACKNOWLEDGMENT**

Republic of the Philippines)
Taguig City ) ss.

**BEFORE ME,** a Notary Public, for and in Taguig City, personally appeared the following:

| Name | Government Issued ID | Date/Place Issued |
|---|---|---|
| | | |
| | | |

known to me to be the same persons who executed the foregoing instrument and they acknowledge to me that their signatures confirm their own free acts and the entities they represent.

**SIGNED AND SEALED** on _____ in Taguig City, Philippines.

Doc. No.
Page No.
Book No.
Series of 2021

**Annex "O-1"**

## BILL OF QUANTITIES

Project Name: **DESIGN AND BUILD FOR THE NATIONAL ACADEMY OF SPORTS (NAS) PHASE 2**

Location: **New Clark City, Capas Tarlac**

| SUMMARY | | |
|---|---|---|
| PART | DESCRIPTION | BID AMOUNT in Php |
| I | Detailed Engineering and Architectural Design | |
| | **Sub Total** | |
| II | | |
| A | Facilities for the Engineer | |
| B | Other General Requirements | |
| C | Earthworks | |
| D | Reinforced Concrete | |
| E | Finishing and Other Civil Works | |
| F | Electrical | |
| G | Mechanical | |
| H | Fire Protection | |
| I | Drainage/Sanitary | |
| J | Softscapes / Landscapes | |
| | **Sub Total** | |
| | | |
| Note: The Bidders may include additional pay items not covered by this form | | |
| TOTAL BID AMOUNT | | |

TOTAL BID AMOUNT:

In Figures: _____

in Words: _____

Name and Signature of Bidder : _____

Name of Company and Official Stamp of Bidder : _____

Date : _____

_____

Official Stamp

**Annex "O-2"**

# BILL OF QUANTITIES

Project Name **: DESIGN AND BUILD FOR THE NATIONAL ACADEMY OF SPORTS (NAS) PHASE 2**

Location **: New Clark City, Capas Tarlac**

| ITEM NO. | DESCRIPTION | UNIT | QTY. | UNIT COST (Pesos) | AMOUNT (Pesos) |
|---|---|---|---|---|---|
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Annex "O-3"

# DETAILED COST ESTIMATE

## DESIGN AND BUILD OF THE NATIONAL ACADEMY OF SPORTS (NAS) - PHASE 2 AT NEW CLARK CITY

## NEW CLARK CITY, CAPAS, TARLAC

## ( GRAND SUMMARY )

| ITEM NO. | DESCRIPTION | QUANTITY | UNIT | ESTIMATED DIRECT COST | | | | MARK-UPS IN PERCENT | | TOTAL MARK-UP | | VAT | TOTAL INDIRECT COST | TOTAL COST | UNIT COST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MATERIAL | LABOR | EQUIPMENT | TOTAL | OCM | PROFIT | % | VALUE | | | | |
| (1) | (2) | (3) | (4) | (5.1) | (5.2) | (5.3) | (5)<br>(5.1) + (5.2) + (5.3) | (6) | (7) | (8) | (9)<br>(5) X (8) | (10)<br>12% ((5)+(9)) | (11)<br>(9)+(10) | (12)<br>(5)+(11) | (13)<br>(12)/(3) |
| | | | | | | | | | | | | | | | |
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| | GRAND TOTAL | | | | | | | | | | | | | | |
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| | | |
|---|---|---|
| TOTAL | Php | |

**Annex "P-1"**

## DAYWORKS SCHEDULE

## LABOR

Project Name: Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City

| NO. | TYPE OF LABOR | UNIT | RATE |
|---|---|---|---|
| 1 | Foreman | Hour | |
| 2 | Skilled Laborer | Hour | |
| 3 | Unskilled Laborer | Hour | |
| 4 | Driver | Hour | |
| 5 | Heavy Equipment Operator | Hour | |
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**Annex "P-2"**

## DAYWORKS SCHEDULE

## MATERIALS

Project Name: Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City

| NO. | TYPE OF MATERIALS | UNIT | RATE |
|---|---|---|---|
| 1 | Cement | Bag | |
| 2 | Fine Aggregate | Cu.m. | |
| 3 | Coarse Aggregate | Cu.m. | |
| 4 | Reinforcing Steel Bars | Kg. | |
| 5 | Coco Lumber | Bd.ft. | |
| 6 | Assorted CWN | Kg. | |
| 7 | G.I. Tie Wire, Ga. 16 | Kg. | |
| 8 | Plywood | piece | |
| | | | |
| | | | |

**Annex "P-3"**

## DAYWORKS SCHEDULE

## EQUIPMENT

Project Name: Design and Build of the National Academy of Sports (NAS) - Phase 2 at New Clark City

| NO. | TYPE OF EQUIPMENT | UNIT | RATE |
|---|---|---|---|
| 1 | Mobile Truck Mounted Crane (50 Tons) | Hour | |
| 3 | Back hoe crawler type (1 cu.m.) | Hour | |
| 4 | 10-Wheeler Truck with Boom (5 Tons) | Hour | |
| 5 | Dump Truck (15 cu.m) | Hour | |
| 6 | Water Truck (5,000L) | Hour | |
| 7 | Generator Set (150 KVA) | Hour | |
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**Annex "Q"**

**Cash Flow by Payment Schedule**

| **Particular** | **% WT.** | **1st Payment** | **2nd Payment** | **3rd Payment** | **4th Payment** | **5th Payment** | **6th Payment** | **6th Payment** | **8th Payment** | **Final Payment** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Accomplishment** | | | | | | | | | | |
| **Cash Flow** | | | | | | | | | | |
| **Cumulative Accomplishment** | | | | | | | | | | |
| **Cumulative Cash Flow** | | | | | | | | | | |

**Submitted by:**

_____

Name of Contractor / Supplier / Distributor / Manufacturer

_____

Name and Signature of Authorized Representative

Date : _____

BCDA
Bases Conversion and Development Authority

# DESIGN AND BUILD

## of the National Academy of Sports (NAS) Phase 2

# TABLE OF CONTENTS

## Technical References

Section I.

# Preliminary Survey and Maps

LMB Form No. GSD.C-1





| TECHNICAL DESCRIPTIONS | | | |
|---|---|---|---|
| LINES | | BEARINGS | DISTANCES |
| LOT 1, A=43,866 Sq.m. | | | |
| 1 | 2 | DUE EAST | 109.00 m. |
| 2 | 3 | DUE SOUTH | 310.52 m. |
| 3 | 4 | DUE WEST | 173.54 m. |
| 4 | 1 | N 11°44' E | 317.16 m. |
| LOT 2, A=15,951 Sq.m. | | | |
| 1 | 2 | DUE WEST | 7.88 m. |
| 2 | 3 | S 89°22' W | 3.40 m. |
| 3 | 4 | S 88°07' W | 3.40 m. |
| 4 | 5 | S 86°52' W | 3.40 m. |
| 5 | 6 | S 85°37' W | 3.40 m. |
| 6 | 7 | S 84°22' W | 3.40 m. |
| 7 | 8 | S 83°07' W | 3.40 m. |
| 8 | 9 | S 81°52' W | 3.40 m. |
| 9 | 10 | S 80°36' W | 3.40 m. |
| 10 | 11 | S 79°21' W | 3.40 m. |
| 11 | 12 | S 78°06' W | 3.40 m. |
| 12 | 13 | S 76°13' W | 6.80 m. |
| 13 | 14 | S 74°21' W | 3.40 m. |
| 14 | 15 | S 73°06' W | 3.40 m. |
| 15 | 16 | S 71°51' W | 3.40 m. |
| 16 | 17 | S 70°35' W | 3.40 m. |
| 17 | 18 | S 69°20' W | 3.40 m. |
| 18 | 19 | S 68°05' W | 3.40 m. |
| 19 | 20 | S 66°50' W | 3.40 m. |
| 20 | 21 | S 65°35' W | 3.40 m. |
| 21 | 22 | S 64°57' W | 79.58 m. |
| 22 | 23 | S 65°47' W | 3.63 m. |
| 23 | 24 | S 67°27' W | 3.63 m. |
| 24 | 25 | S 69°08' W | 3.63 m. |
| 25 | 26 | S 70°48' W | 3.63 m. |
| 26 | 27 | S 72°28' W | 3.63 m. |
| 27 | 28 | S 74°08' W | 3.63 m. |
| 28 | 29 | S 75°48' W | 3.63 m. |
| 29 | 30 | S 77°28' W | 3.63 m. |
| 30 | 31 | S 79°08' W | 3.63 m. |
| 31 | 32 | S 80°48' W | 3.63 m. |
| 32 | 33 | S 82°28' W | 3.63 m. |
| 33 | 34 | S 84°08' W | 3.63 m. |
| 34 | 35 | S 85°49' W | 3.63 m. |
| 35 | 36 | S 87°29' W | 3.63 m. |
| 36 | 37 | S 89°09' W | 3.63 m. |
| 37 | 38 | N 11°44' E | 122.56 m. |
| 38 | 39 | DUE EAST | 173.54 m. |
| 39 | 1 | DUE SOUTH | 59.98 m. |

| TIE LINES from TRC-45 to corner "1" | | |
|---|---|---|
| LOTS | BEARINGS | DISTANCES |
| LOT 1 | S 52°31' E | 3215.55 m. |
| LOT 2 | S 48°49' E | 3534.87 m. |

N

S

# SURVEY PLAN

**OF PROPOSED**
**NATIONAL ACADEMY OF SPORTS**
AS SURVEYED FOR
**Republic of the Philippines**
**Bases Conversion and Development Authority**
SITUATED IN THE

RURBAN CODE :
BARANGAY OF : ARANGUREN
MUN./CITY OF : CAPAS
PROVINCE OF : TARLAC
ISLAND OF : LUZON
CONTAINING AN AREA OF 59,817 SQ. M.

ZONE NO.
PPCS-PTM/PRS 92
BEARING : TRUE
SCALE 1: 2000

0 10 20 30 50 100 200

CERTIFICATION

*We hereby certify that this is a correct proposed plan of National Academy of Sports with containing area of Fifty Nine Thousand Eight Hundred Seventeen Square Meters (59,817 Sq.m.) parcel of land being a portion of Lot 1-A, Nr-03-000021-D Amd.*

*I further certify that the technical descriptions of the boundary lines appearing on this plan are computer generated and subject to actual joint survey.*

FEB. 05, 2021
*Date Prepared*

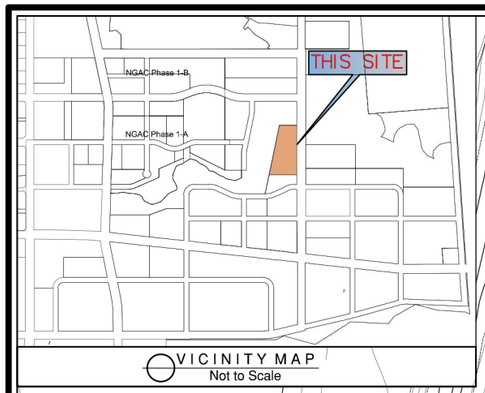
Prepared by:
**REGIE M. CEPE**
CARTOGRAPHER / CAD
LAND AND ASSETS DEVELOPMENT DEPARTMENT
BASES CONVERSION AND DEVELOPMENT AUTHORITY

Checked by:
**SHERA MARIE E. SERAD**
GEODETIC ENGINEER
LAND AND ASSETS DEVELOPMENT DEPARTMENT
BASES CONVERSION AND DEVELOPMENT AUTHORITY

Noted by:
**VICTOR JOY D. LAGRIA**
GEODETIC ENGINEER/LMO IV
LAND AND ASSETS DEVELOPMENT DEPARTMENT
BASES CONVERSION AND DEVELOPMENT AUTHORITY

*STSP# 2021-R-0003*

LMB Form No. GSD.C-1




| TECHNICAL DESCRIPTIONS | | |
|---|---|---|
| LINES | BEARINGS | DISTANCES |
| LOT 1, A=43,866 Sq.m. | | |
| 1 2 | DUE EAST | 109.00 m. |
| 2 3 | DUE SOUTH | 310.52 m. |
| 3 4 | DUE WEST | 173.54 m. |
| 4 1 | N 11°44' E | 317.16 m. |
| TIE LINES from TRC-45 to corner "1" | | |
| LOTS | BEARINGS | DISTANCES |
| LOT 1 | S 52°31' E | 3215.55 m. |

N

LOT 1
NATIONAL ACADEMY OF SPORTS
A=43,866 Sq.m.

LOT 2

FISHPOND

WH

N=1,697,065.18

E=450,241.27

# SURVEY PLAN

**OF PROPOSED NATIONAL ACADEMY OF SPORTS (LOT 1)**

AS SURVEYED FOR

**Republic of the Philippines**

**Bases Conversion and Development Authority**

SITUATED IN THE

RURBAN CODE :
BARANGAY OF : ARANGUREN
MUN./CITY OF : CAPAS
PROVINCE OF : TARLAC
ISLAND OF : LUZON
CONTAINING AN AREA OF 43,866 SQ. M.

ZONE NO.
PPCS-PTM/PRS 92
BEARING : TRUE
SCALE 1: 1000

0 10 20 30 40 50 100

CERTIFICATION

*We hereby certify that this is a correct proposed plan of National Academy of Sports with containing area of Forty Three Thousand Eight Hundred Sixty Six Square Meters (43,866 Sq.m.) parcel of land being a portion of Lot 1-A, Nr-03-000021-D Amd.*

*I further certify that the technical descriptions of the boundary lines appearing on this plan are computer generated and subject to actual joint survey.*

FEB. 05, 2021
*Date Prepared*

Prepared by:
**REGIE M. CEPE**
CARTOGRAPHER / CAD
LAND AND ASSETS DEVELOPMENT DEPARTMENT
BASES CONVERSION AND DEVELOPMENT AUTHORITY

Checked by:
**SHERA MARIE E. SERAD**
GEODETIC ENGINEER
LAND AND ASSETS DEVELOPMENT DEPARTMENT
BASES CONVERSION AND DEVELOPMENT AUTHORITY

Noted by:
**VICTOR JOY D. LAGRIA**
GEODETIC ENGINEER/LMO IV
LAND AND ASSETS DEVELOPMENT DEPARTMENT
BASES CONVERSION AND DEVELOPMENT AUTHORITY

*STSP# 2021-R-0003*

Section II.

# NGAC Master Development Plan

# DETAILED MASTER PLAN

## NEW CLARK CITY NATIONAL GOVERNMENT ADMINISTRATIVE CENTER

TASK A4 MASTER PLAN DEVELOPMENT REPORT

JANUARY 2021

05

# TRANSPORTATION

A people-centric transport system that is well-connected, affordable, convenient and seamless plays a crucial role in ensuring that NGAC is livable, inclusive and attractive.

This chapter will outline the development of the transport master plan of NGAC. It will elaborate different modes of transport, including the road network, different public transport modes, regional transportation linkages, parking, and non-motorized transport.

The goal is to establish NGAC as a district with numerous transport options, that are efficient, comprehensive and convenient, with amenities and destinations that are easily and universally accessible.

# 5.1 ROAD NETWORK

## 5.1.1 ROAD LAYOUT

### Vision and Principles

The principles that inform the concept for transport strategy are:

1. Permeable Road Transport for Passenger Navigation Promotion and development of an efficient and sustainable road transport.
2. Public Transport for Daily Commuter Access to different modes of transportation, including alternative modes and non-motorized transport.
3. Green Non-Motorized Transport (NMT) for Pedestrian Access


Figure 5.1 Transport Principles

*Icon Sources: inipagistudio from Flaticon, Good Ware from Flaticon*
*Image Source: Designed by pch.vector / Freepik*

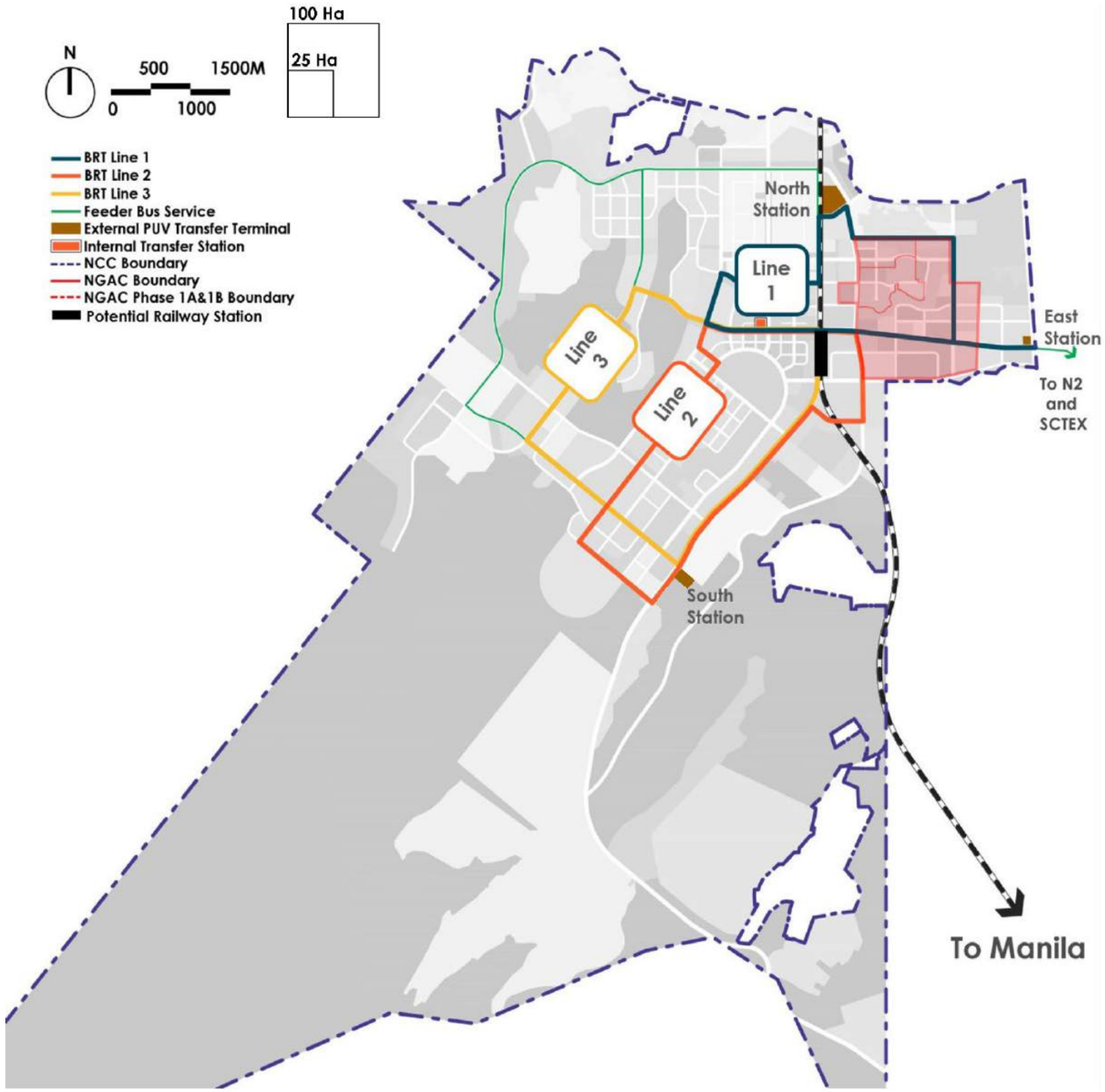



Figure 5.2 Transportation System to NCC and External Areas

*Source: SJ based on the Overall NCC Transport Plan (as of June 2020))*

# 5.2 REGIONAL CONNECTIVITY

## 5.2.1 CONNECTIVITY WITHIN NCC AND EXTERNAL DESTINATIONS

Within NCC: Proposed Internal Public Transport System

- Bus Rapid Transit (BRT) System: Lines 1, 2, and 3 (Routes) servicing several districts throughout NCC
- Feeder Bus Service

External Destinations: To Metro Manila, Subic, and other parts of northern Luzon

- NLEX to Metro Manila
- North-South Commuter Railway (NSCR) Connection
- SCTEX to Subic
- TPLEX to northern Luzon

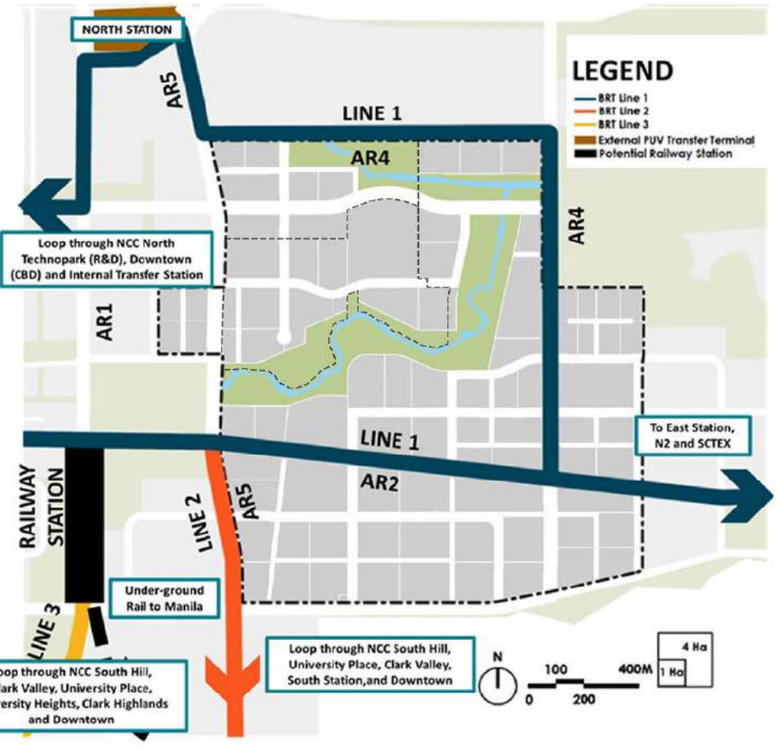



Figure 5.3 Transportation System within NGAC

*Source: SJ based on the Overall NCC Transport Plan (as of June 2020))*

## 5.2.2 TRANSFER TERMINALS WITHIN NCC TO EXTERNAL DESTINATIONS

Terminal Type, Location, and Land Area Allocation:

Proposed Bus Transfer Terminals

- North Terminal at the NCC entry from the Capas-Botolan Road = 8.73 Hectares
- South Terminal within Clark Special Economic Zone = 3.49 Hectares
- East Terminal towards the entry of NCC from the MacArthur Highway = 2.88 Hectares

Proposed Railway Terminal

- Clark Commuter Railway Station

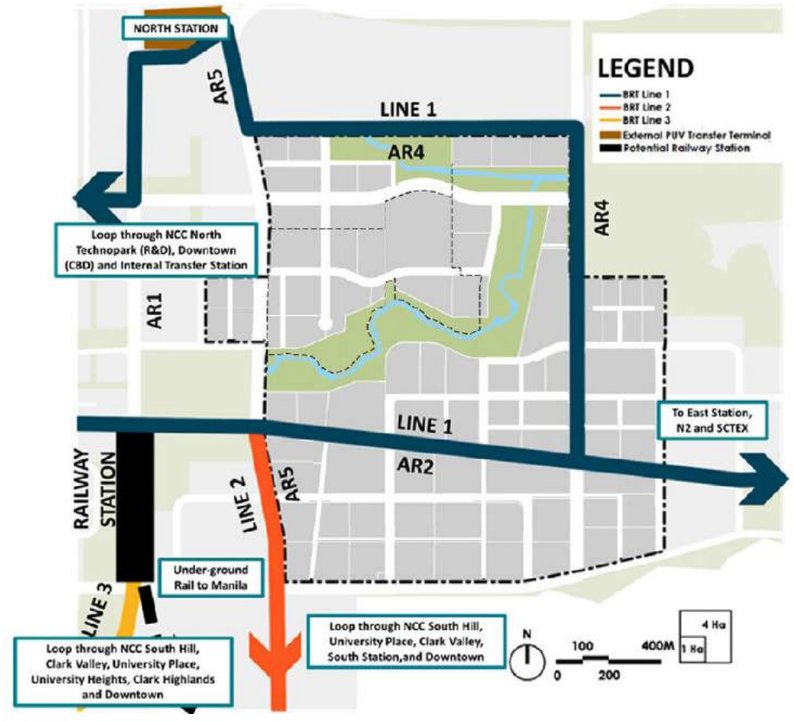



Figure 5.4 Transportation System within NGAC

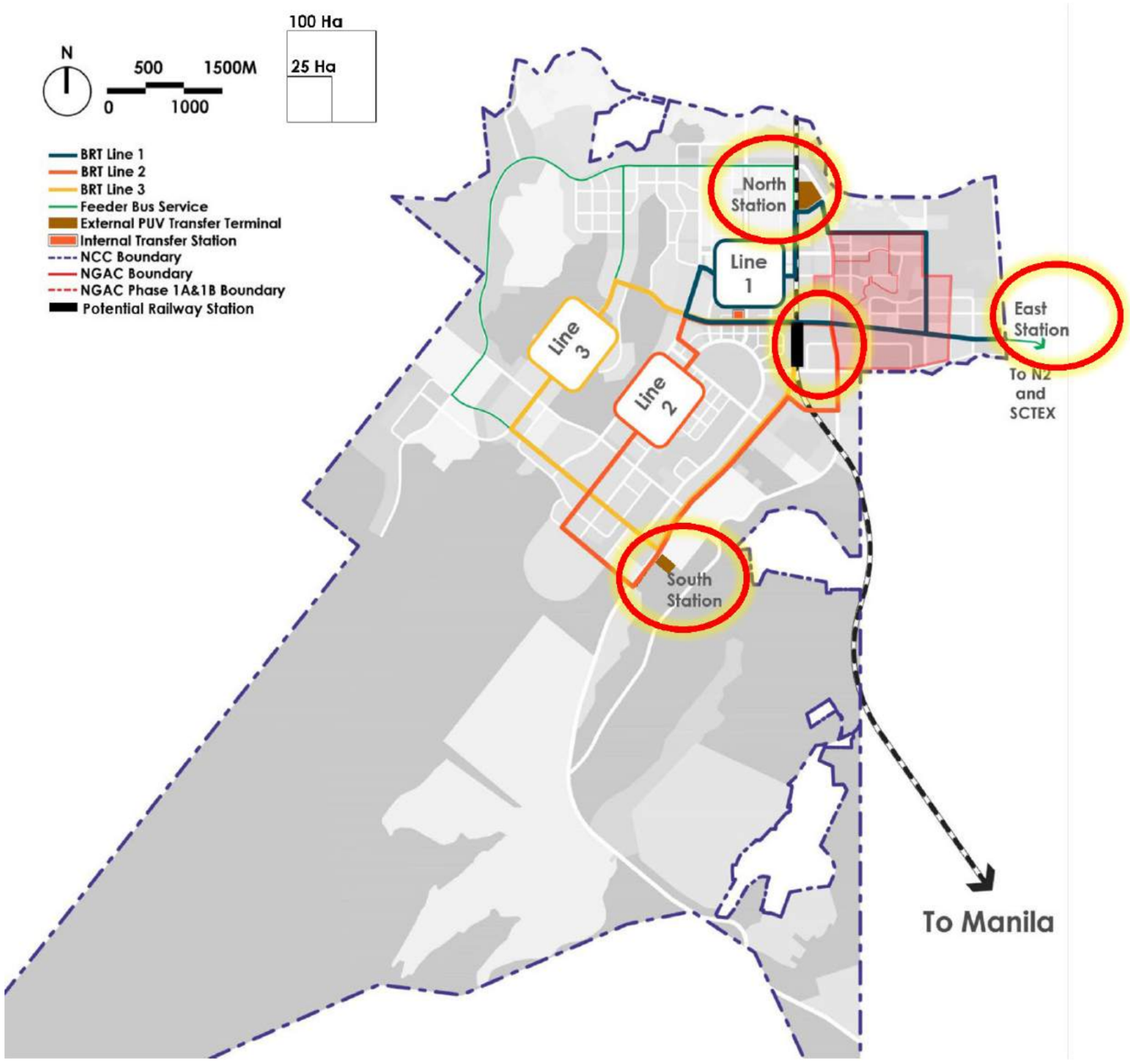



Figure 5.5 Transportation System within NGAC

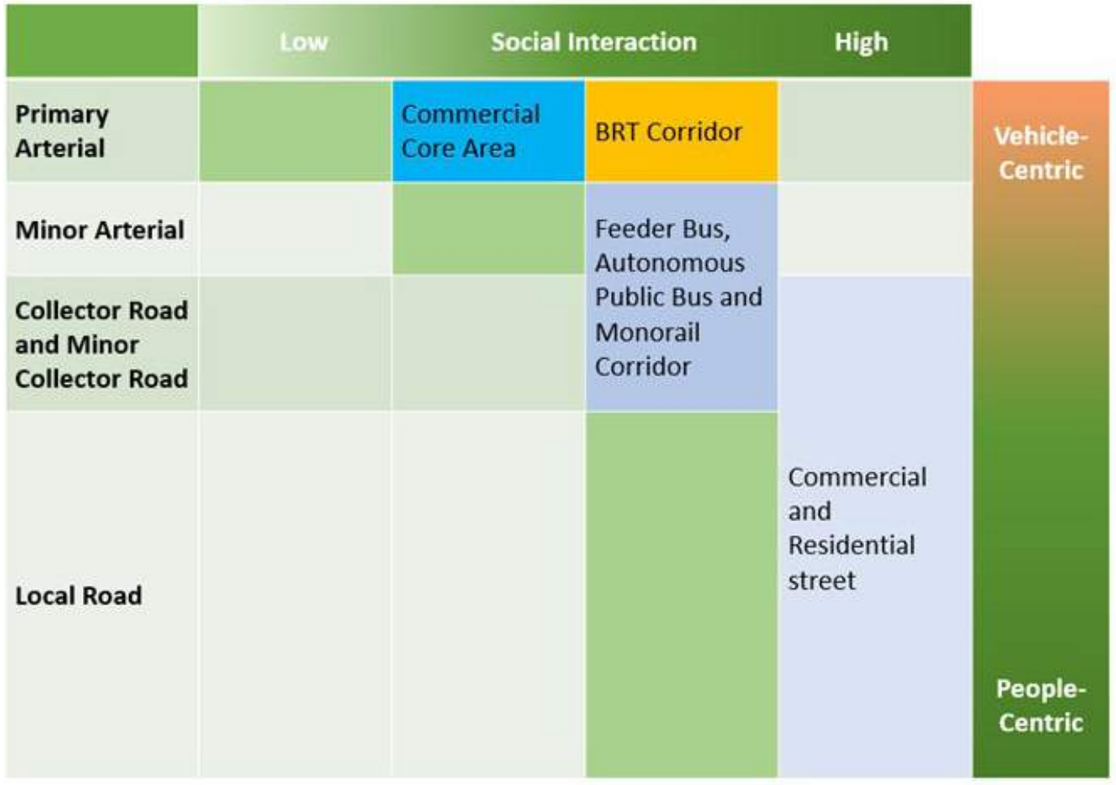



Figure 5.6 Road Hierarchy Matrix

# 5.3 ROAD NETWORK

## 5.3.1 ROAD HIERARCHY STRATEGIES

### Road Hierarchy Matrix

To support the NGAC Detailed Master Plan, there is need to provide a standardized and well-planned road hierarchy to ensure that the roads are designed for their intended use with priority given to people's safety and social needs, depending on the urban context.

A proposed road hierarchy matrix was developed based on road classes and social interaction. This is in accordance with local road design practices, which have been shaped by the commitment to create a roadway environment that addresses safety, capacity, economic, and environmental concerns.

There are Four (4) proposed classification of roads within NGAC district:

- Primary Arterial Road (57m)
- Minor Arterial Road (48m)
- Collector Road (31m) Minor Collector Road (22m)
- Local Road (15m)

### Roadway Environment and Social Interaction

The two major considerations in classifying highway and street networks functionally are access and mobility.

The (urban principal / primary) arterial system carries most of the trips entering and leaving the urban area, as well as most of the through movements bypassing the central city.

The (urban) minor arterial street system places more emphasis on land access than the higher system does and offers lower traffic mobility.

(Urban) Collector street system penetrate residential neighborhoods, distributing trips from the arterials through the area to their ultimate destinations.

Local roads and streets have relatively short trip lengths and because property access is their main function, there is little need for mobility or high operating speeds.

*Source: AASHTO, A Policy on Geometric Design of Highways and Streets*

## Road Hierarchy

The hierarchy of the functional systems consists of principal arterials (for main movement), minor arterials (distributors), collectors, and local roads and streets. These classifications differ for urban and rural areas. Since NGAC district will be a future urban area, the following descriptions below satisfy the said category:

### Principal / Primary Arterial Road (57m)

Principal / Primary arterial road system serves the major centers of activity of urbanized areas, the highest traffic volume corridors, and the longest trip desires. This system carries a high proportion of the total urban area travel even though it constitutes a relatively small percentage of the total roadway network. The system should be integrated both internally and between major rural connections.

### Minor Arterial Road (48m)

The minor arterial road system interconnects with and augments the urban principal arterial system. It accommodates trips of moderate length at a somewhat lower level of travel mobility than principal arterials do. This system distributes travel to geographic areas smaller than those identified with the higher system.

### Collector Road (31m) and Minor Collector Road (22m)

The collector road system provides both land access service and traffic circulation within residential neighborhoods and commercial and industrial areas.

### Local Road (15m)

The urban local road system is comprised of the network that does not belong to the higher systems. It primarily permits direct access to abutting lands and connections to the higher order systems.

### Slip Road

A Slip road is a service road running parallel to a higher-speed, limited-access road. A slip road or service road is often used to provide access to private driveways, shops, houses, industries or farms for road safety, where parallel high-speed roads are provided as part of a major highway.

### Internal Access Road (10m)

Internal access road means a private road providing vehicular access within the property boundary of a parcel being proposed for development. This is only for the locator's reference upon implementation.

The Internal Access Roads are only indicative as shown on the map.

*Source: AASHTO, A Policy on Geometric Design of Highways and Streets*

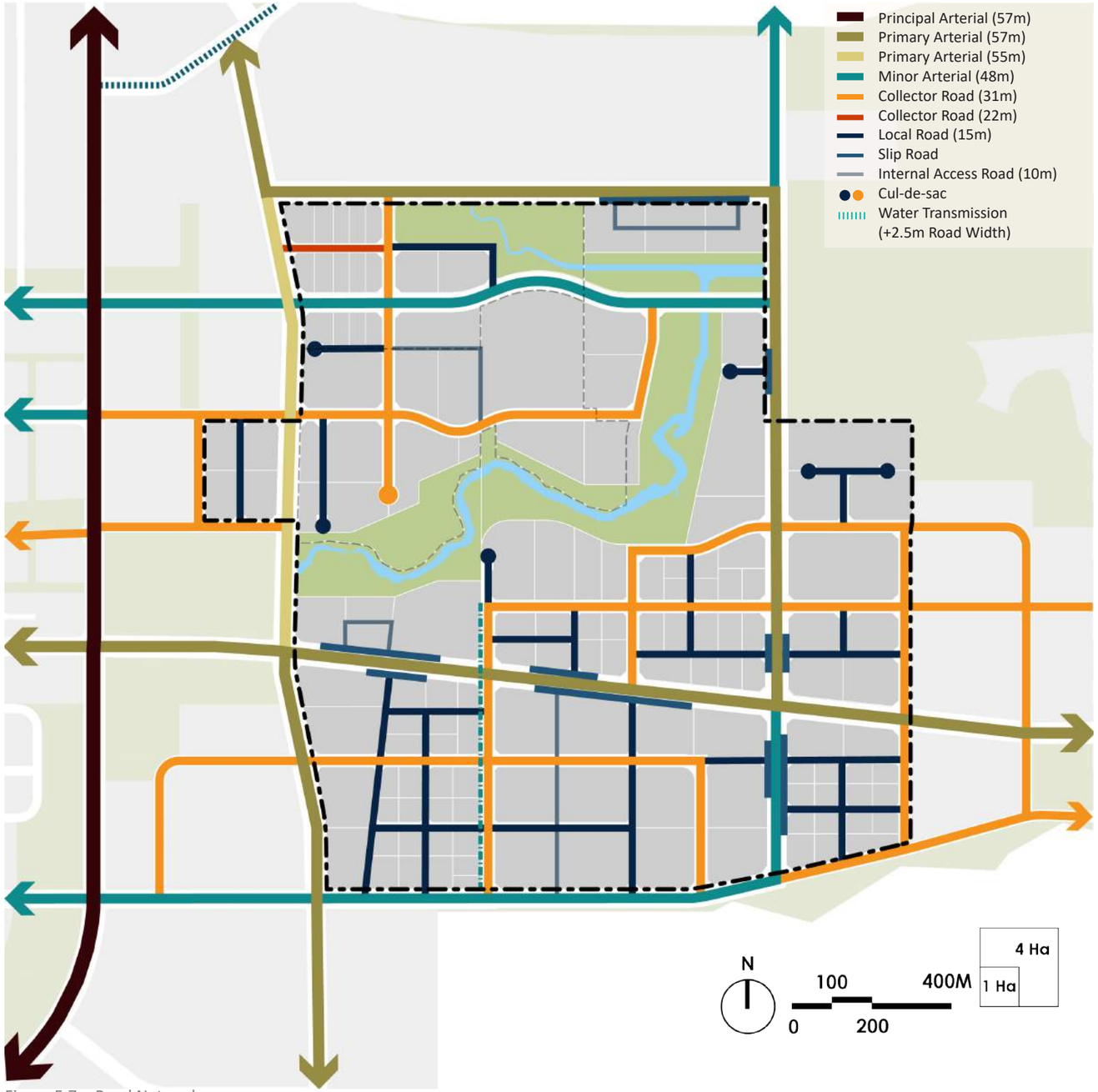



Figure 5.7 Road Network

*Source: SJ based on the Overall NCC Transport Plan (as of June 2020))*

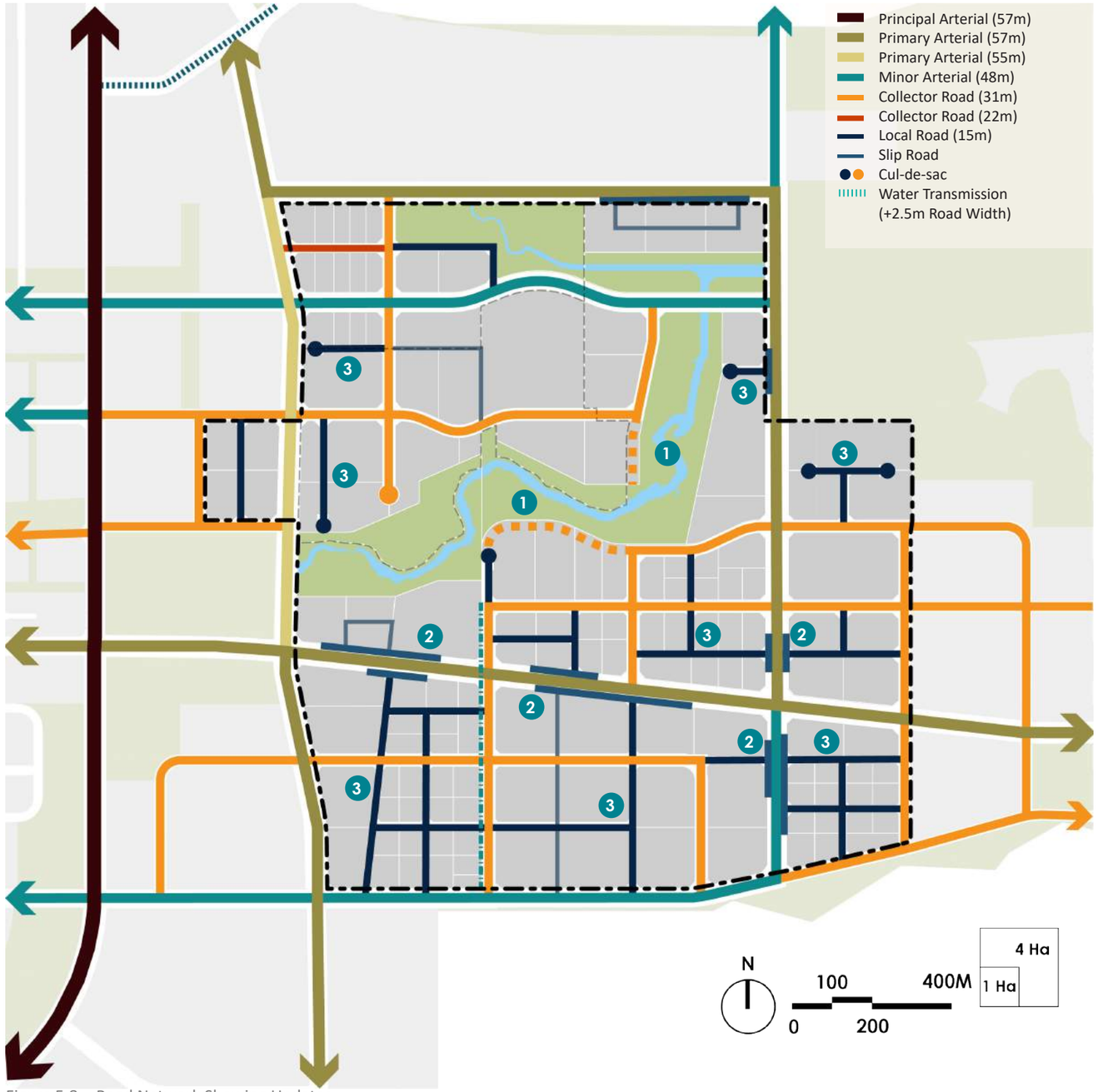



Figure 5.8 Road Network Showing Updates

## Local Road Strategy

- Currently, the road network includes an Arterial and Collector system based on the proposed overall NCC transport plan.
- To supplement the overall network, local roads shall be introduced for plots where existing access can only be tapped from the arterial roads.
- Doing this will minimize intersections along arterial roads (Local Roads should only intersect with Collector Roads, where possible) to ensure smoother traffic flows.
- Roads along green spaces and parks shall also be avoided or minimized as much as possible.

## Updates based on Overall NCC Transport Plan(as of June 2020)

The following are the proposed updates from overall NCC transport plan:

- Removal of Collector Roads to maximize the development frontage along riverside.
- Adoption of Slip Road and Right-in-right-out on Arterial roads to avoid traffic interference and ensure access for plots along primary arterial roads.
- Addition of Local Road and Internal Access Road within large land parcels for improved access to smaller plots.

It is noted that the local roads are proposals that will be reflected in the Development Control for each locator to follow.

Also, the Internal Access roads are recommended for improved access into the plots and are shown as an indicative alignment only. The master developer will only be in charge of the road network from the collector roads and above level.

1. Proposed removed Collector Road
2. Proposed Slip Roads and Right-in-right-out
3. Proposed Local Road

## 5.3.2 ADDITIONAL SLIP ROAD SEGMENTS ALONG PRIMARY ARTERIALS

### Locations and Detail Plans

Slip roads provision along Arterial roads will improve the safety, as well as increase accessibility to the plots along the Arterial roads.

For Typical Slip Road and RIRO Design, see Figure 5.13.

To reduce the traffic interference on the Primary Arterial (AR4 and AR2), slip roads shall be provided as side access to connect with “internal access” roads.

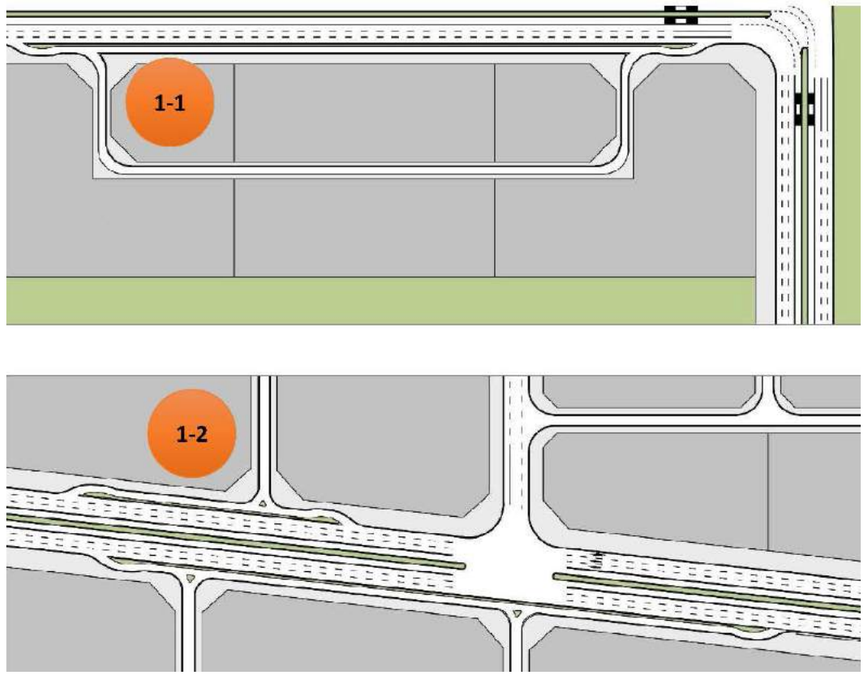



Figure 5.9 Blow-up View of Proposed Slip Roads at ‘Points 1-1 and 1-2’

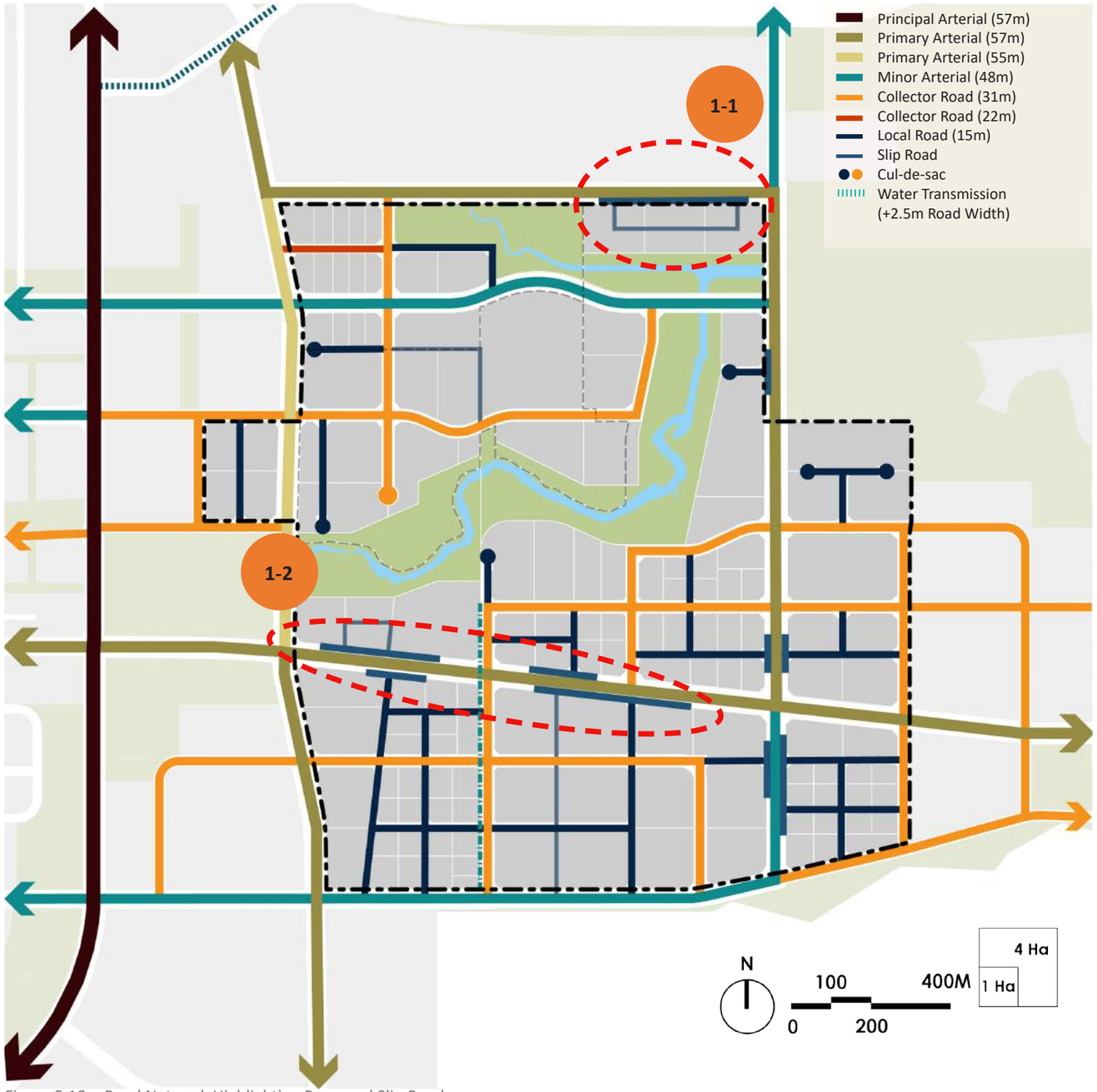



Figure 5.10 Road Network Highlighting Proposed Slip Roads

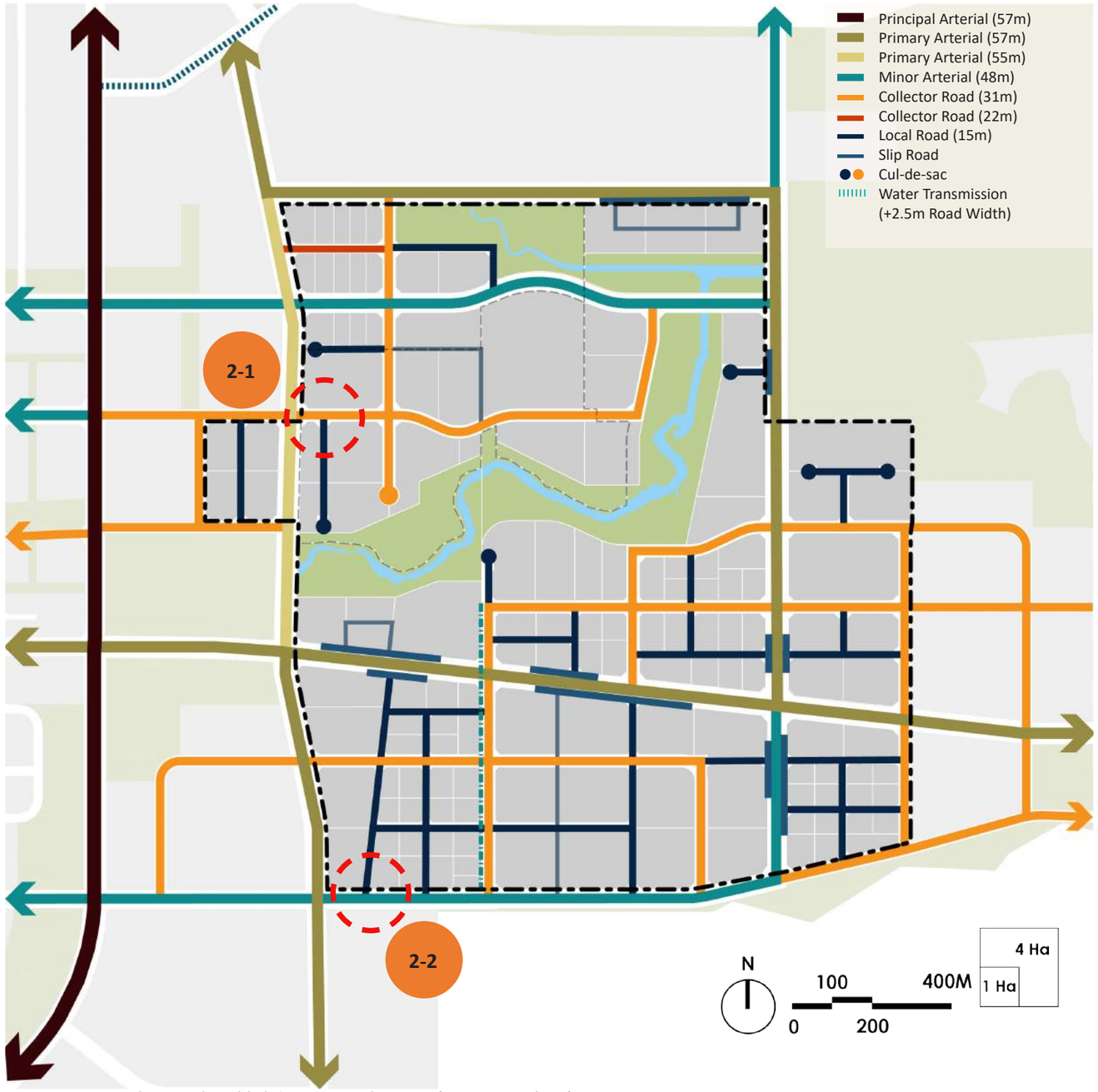



Figure 5.11 Road Network Highlighting Proposed RIRO at 'Point 2-1 and 2-2'

## 5.3.3 RIGHT-IN-RIGHT-OUT (RIRO)

### Locations and Detail Plans

Right-In Right-Out or RIRO is a type of three-way road intersection that only permits right turns.

- The turn are required to be at least 50 m away from the intersections to the Primary Arterials.
- If the junction is too close to the local road, a provision of RIRO must include features to slow down vehicles.

For Typical Slip Road and RIRO Design, see Figure 5.13.

*Source: AASHTO, A Policy on Geometric Design of Highways and Streets*

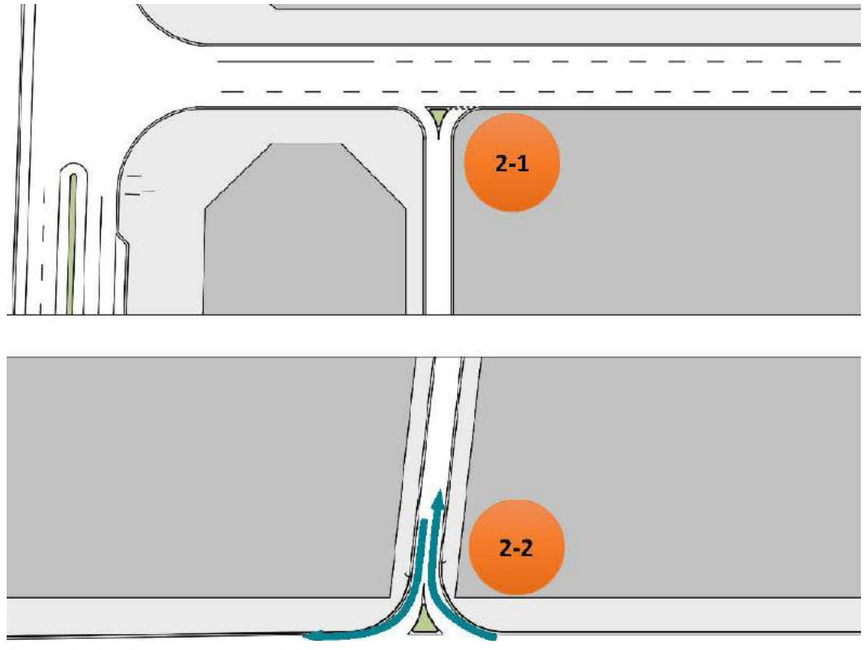



Figure 5.12 Blow-up View of RIRO

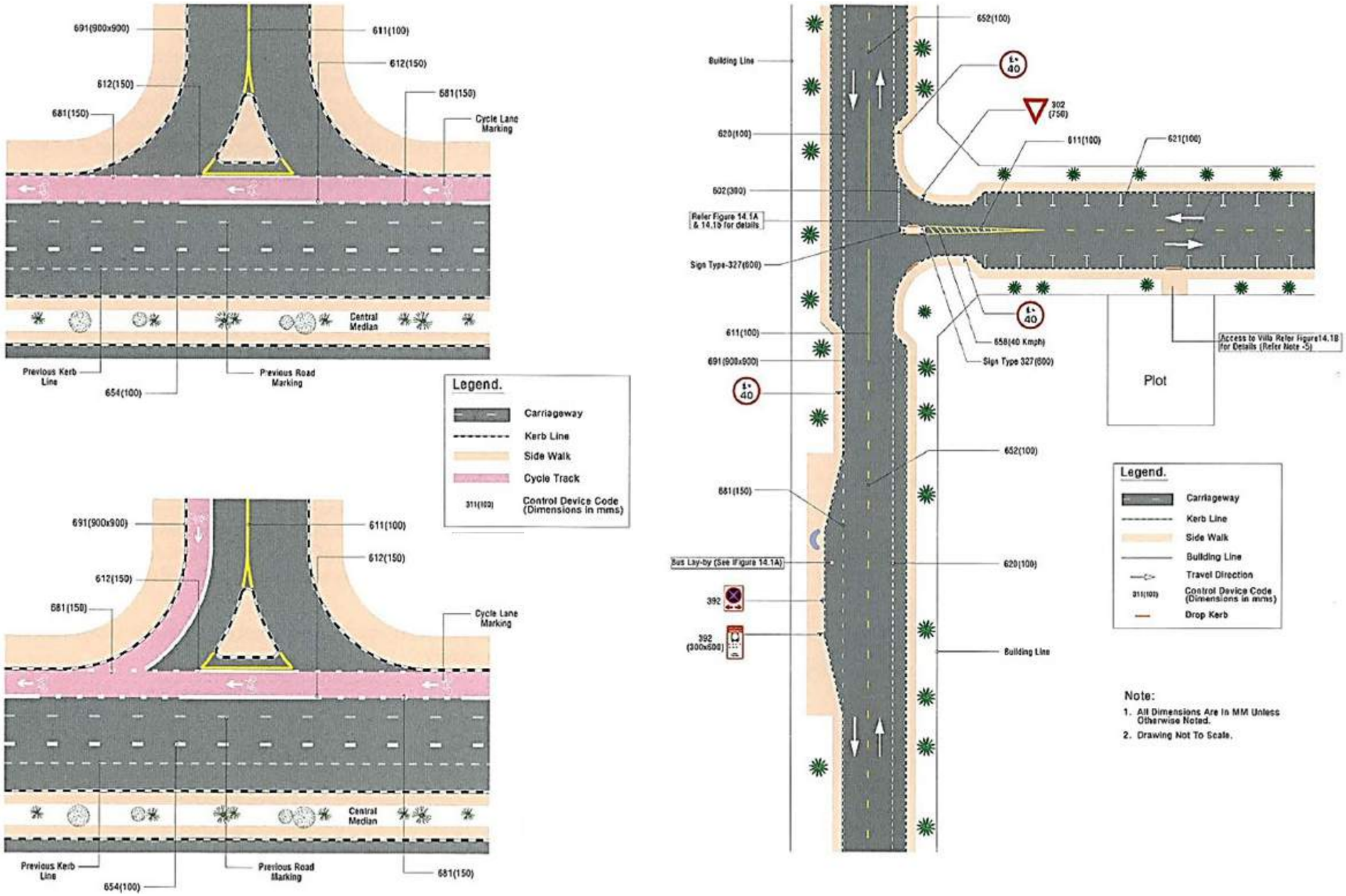



Figure 5.13 Typical Slip Road and RIRO Design *Source: Dubai Pedestrian and Cyclist Design Manual, January 2006, Chapter 14*

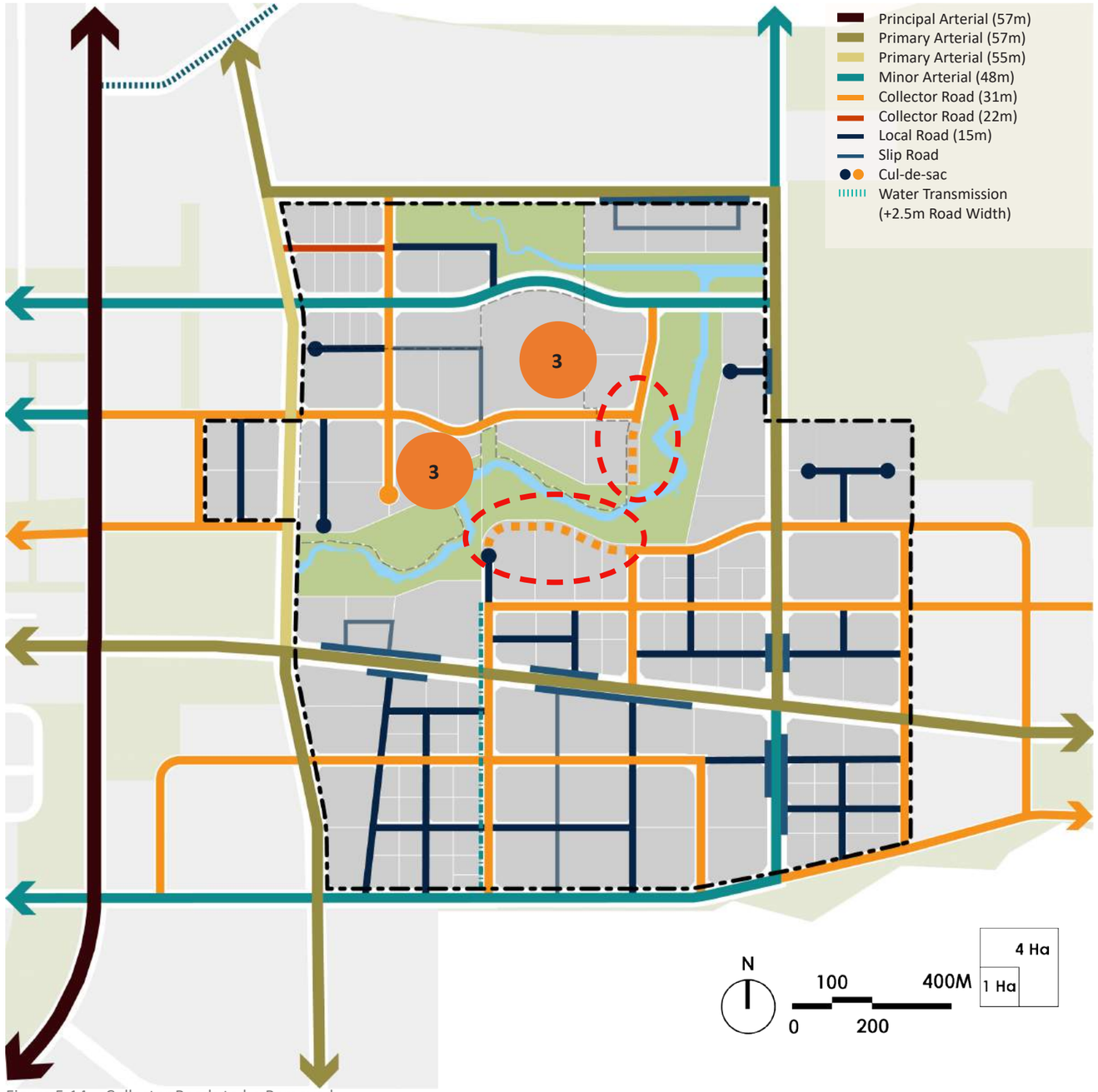



Figure 5.14 Collector Roads to be Removed

## 5.3.4 REMOVAL OF THE PLANNED COLLECTOR ROADS

### Locations and Detail Plan

Figure 5.14 illustrates the plan proposals to reduce the amount of roads fronting the river corridor. Upon confirmation with Primewater (NCC's water provider) on Nov 6, 2020, this proposal will not impact the water service for the affected parcels as shown on Figure 5.15.

Also, the removal of collector roads have minimal impact on the traffic flow based on the calculated Average Daily Traffic (ADT).

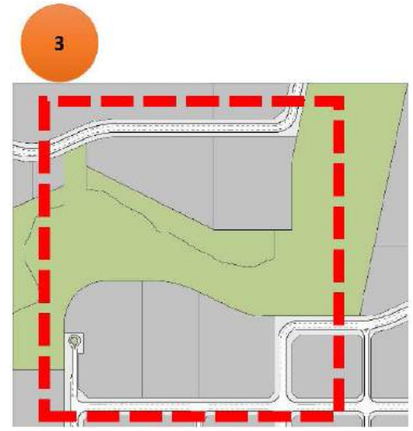



Figure 5.15 Blow-up View of Collector Roads to be removed at 'Points 3'

## 5.3.5 INTRODUCING "T-INTERSECTION" TO CONNECT LOCAL ROADS

### Location and Detail Plan

T-intersection or three-leg intersection has the normal pavement width of both highways maintained except for the paved corner radii or where widening is needed to accommodate the selected design vehicle.

With the additional local road proposed to connect at the turning radius of a collector road. As shown on Figure 5.16, the detail plan resolves the intersection and improve the flow of traffic.

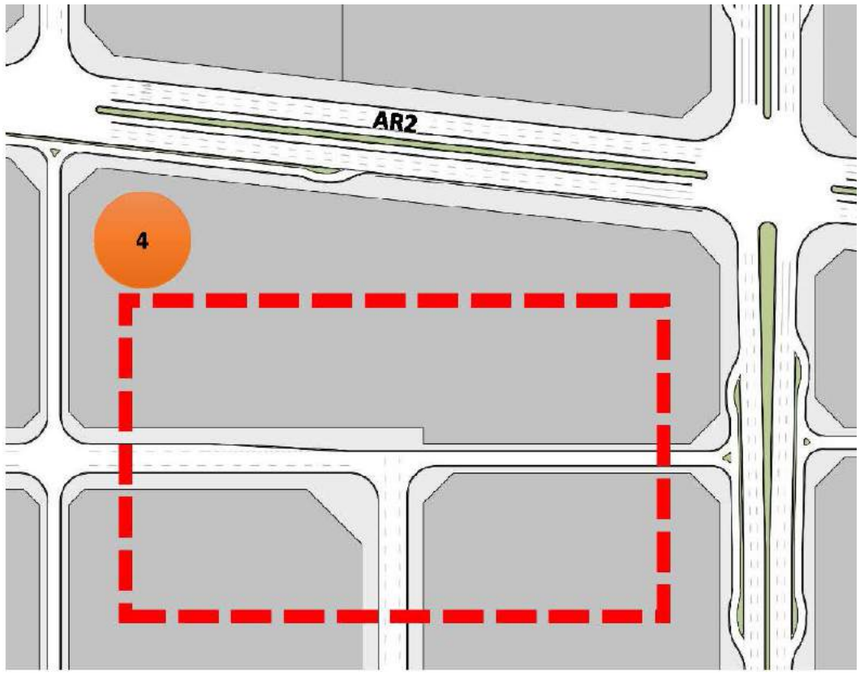



Figure 5.16 Blow-up View of Proposed T-Intersection at 'Point 4'

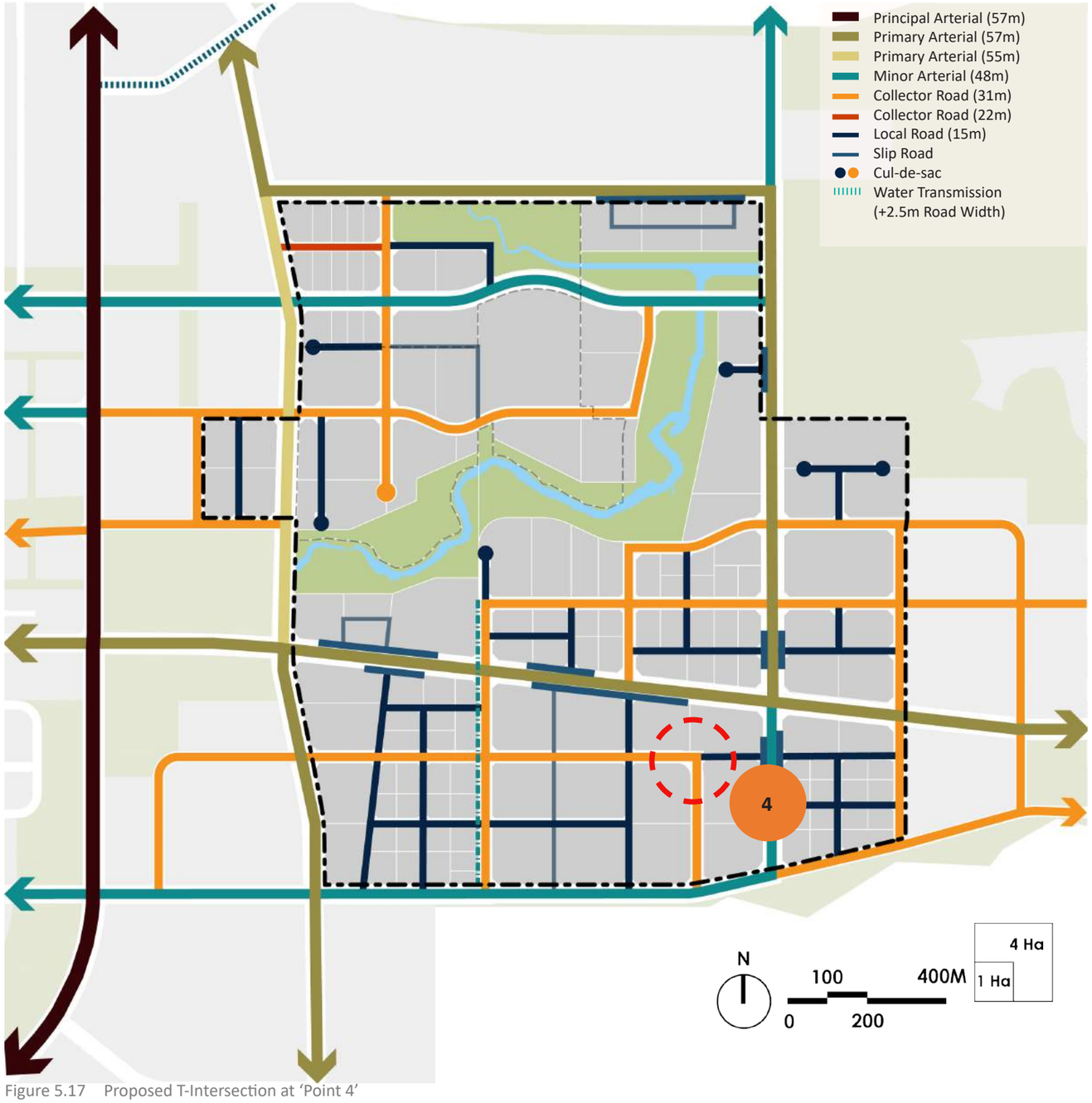



Figure 5.17 Proposed T-Intersection at 'Point 4'

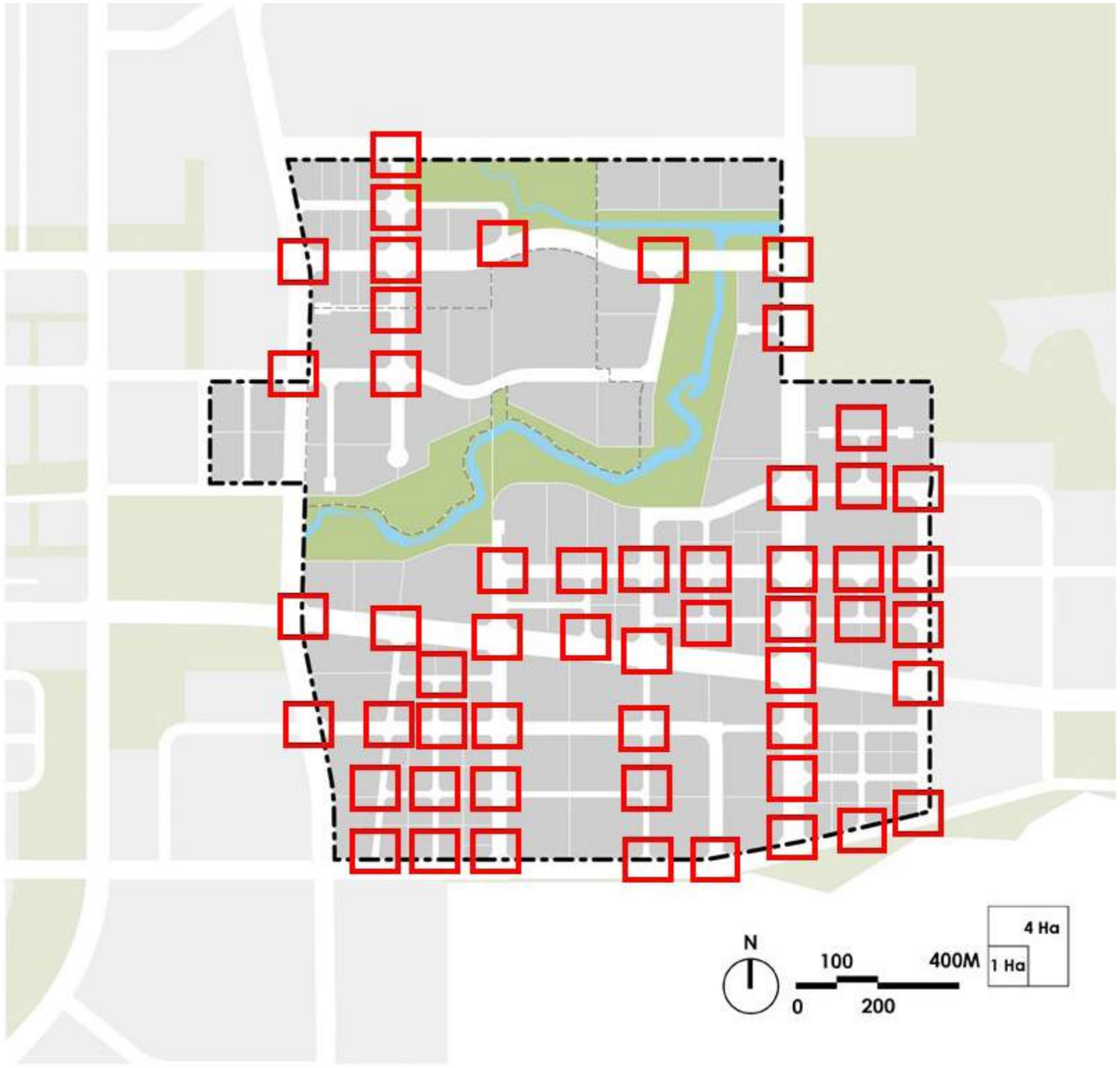



Figure 5.18 Road Junctions

## 5.3.6 ROAD JUNCTIONS

### At-Grade Intersection Locations and Detail Plan

At-grade intersections are crossings or junctions of two or more roads / highways at a common level.

*Source: DPWH Design Guidelines, Criteria & Standards (DGCS) Volume 4*

At-grade intersections occur on roadway sections with moderate to steep grades. It is desirable to reduce the grade through the intersections.

*Source: AASHTO, A Policy on Geometric Design of Highways and Streets*

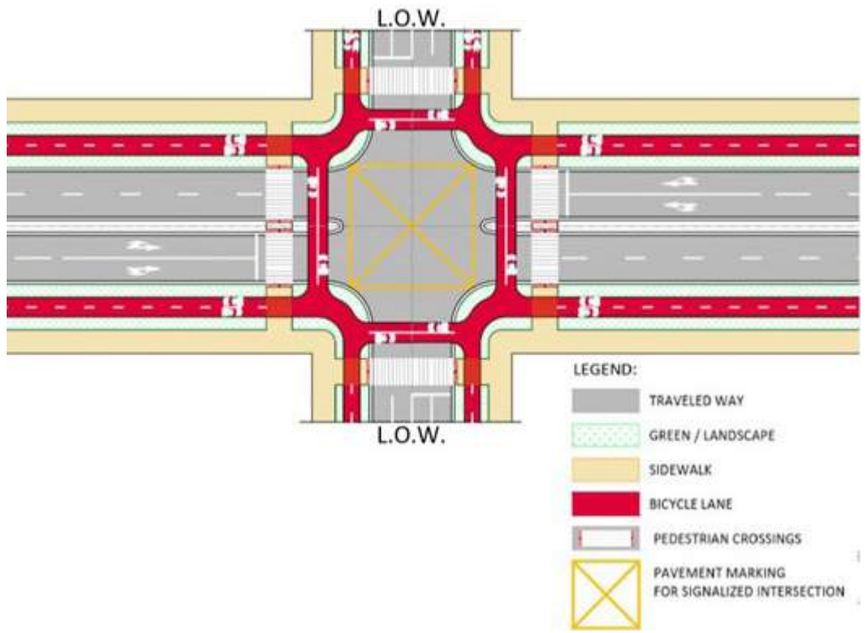
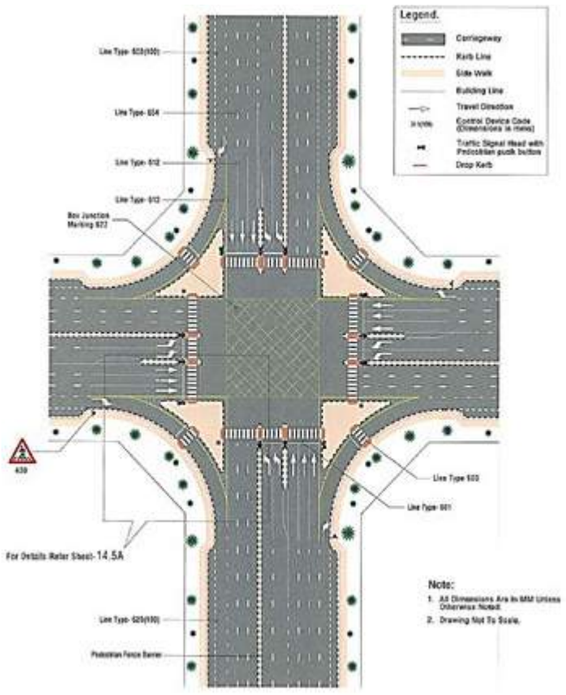
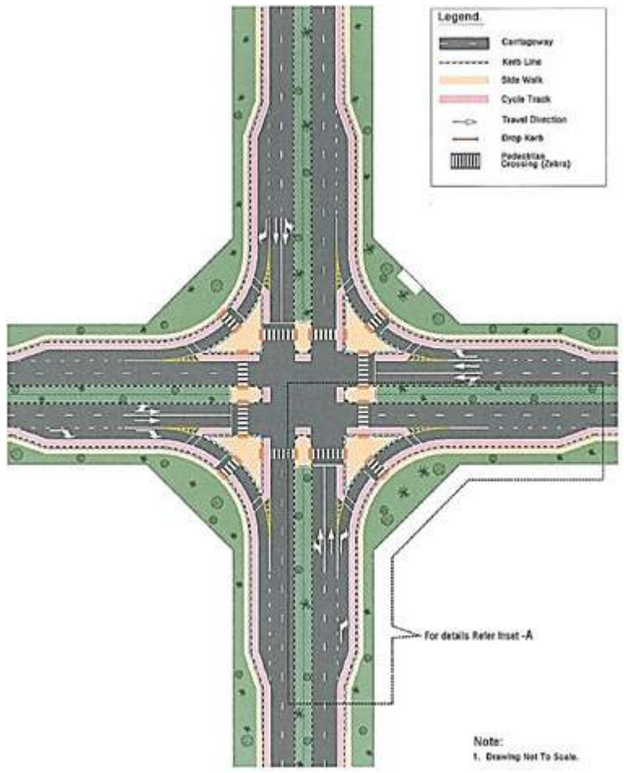
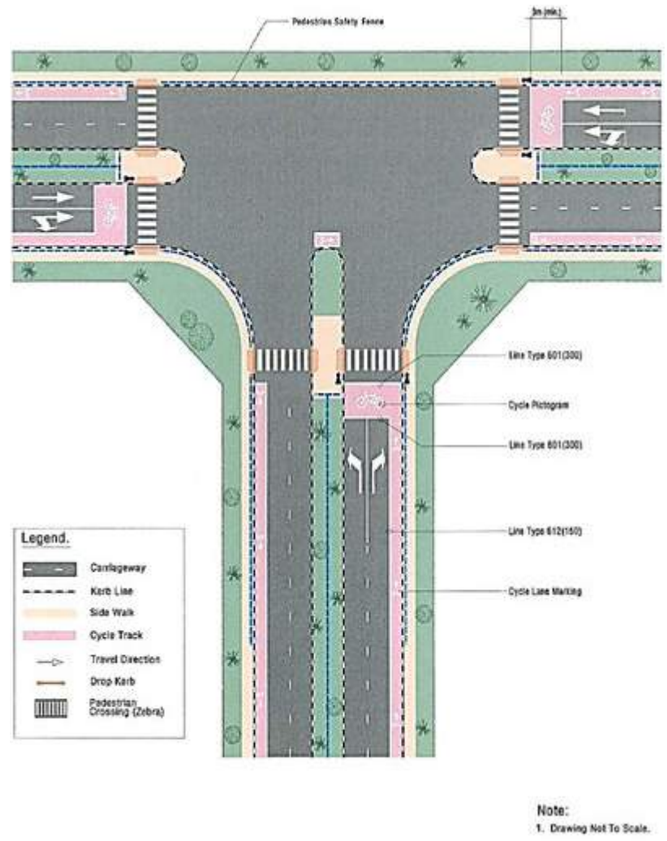
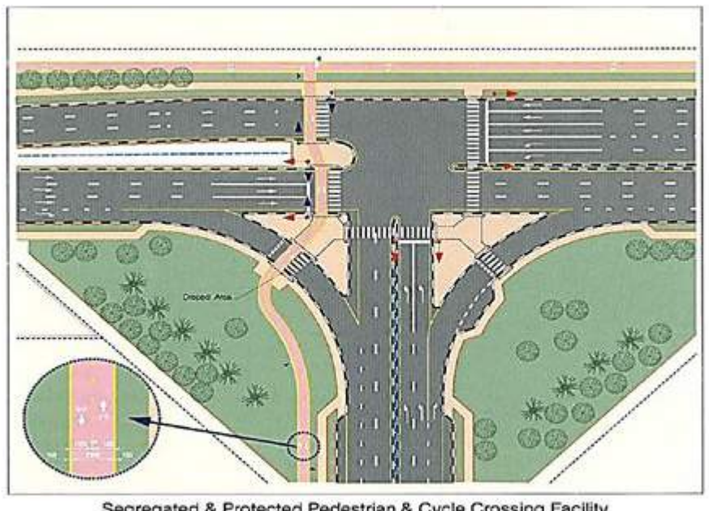



Figure 5.19 Sample Blow-up of Intersection




Segregated & Protected Pedestrian & Cycle Crossing Facility
At A Signalized Junction (Off Road Cycle Lane)


Note:
1. Drawing Not To Scale.

Figure 5.20 Typical Intersection Design

*Source: Dubai Pedestrian and Cyclist Design Manual, January 2006, Chapter 14*

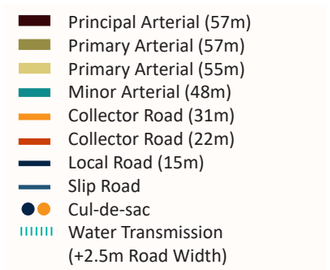
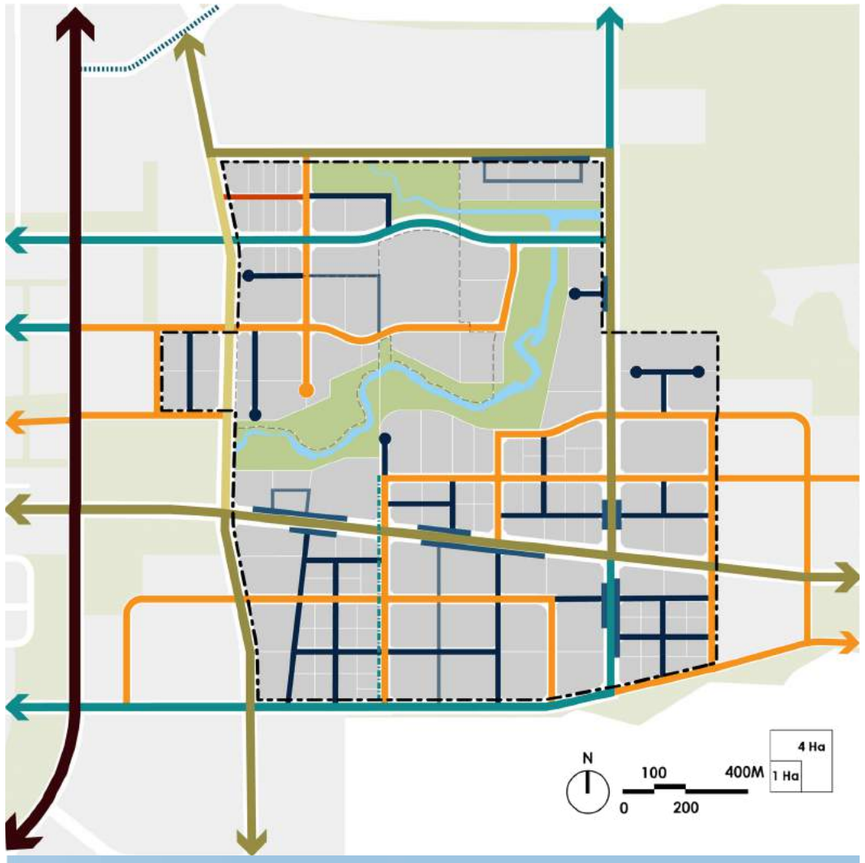
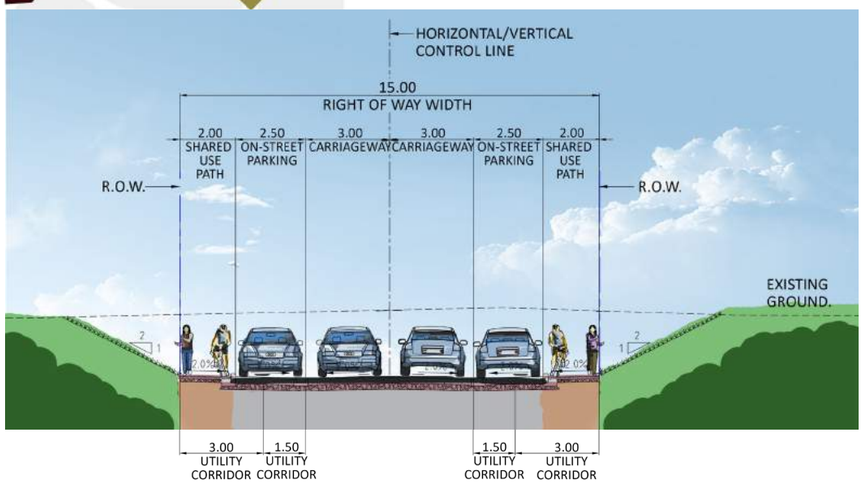



Figure 5.21 Road Network




*NOTE: Typical Road Cross Sections are based on the Overall NCC transport plan proposed Road Cross Sections (as of June 2020).*

Figure 5.22 Proposed Typical Cross Sections for Local Roads

## 5.3.7 ROAD SECTIONS

### Cross Section

A vertical section of the ground and roadway at right angles to the centerline of the roadway, including all elements of a highway or street from right-of-way line to right-of-way line.

- Roadway
  This is the portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways.

- Traveled Way
  The portion of the roadway for the movement of vehicles, exclusive of shoulders and bicycle lanes.

- Curb
  It incorporates some raised or vertical element and serves as drainage control, roadway edge delineation, right-of-way reduction, aesthetics, delineation of pedestrian walkways, reduction of maintenance operations, and assistance in orderly roadside development.

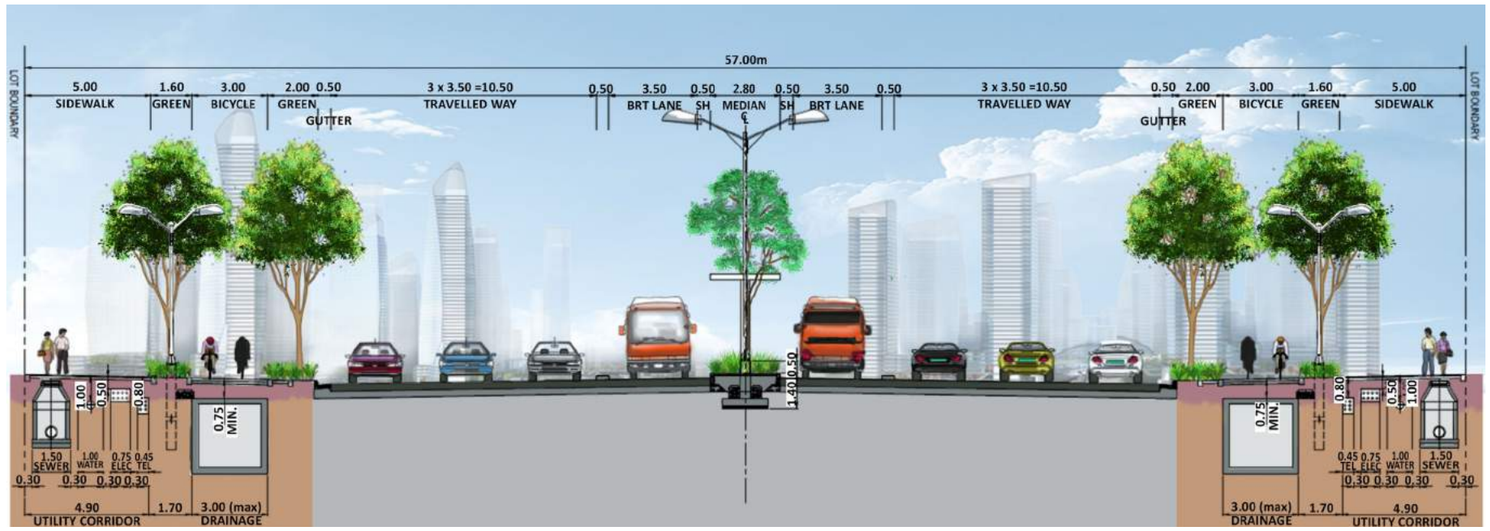
- Sidewalk
  It is a path along the side of a road commonly used by pedestrians.

- Bicycle Lane
  Bicycle usage can be expected on most urban arterials and should be considered in arterial street design. Features provided for bicycles may include wider outside lanes (with or without shared lane markings), bike lanes, and shared use side paths.

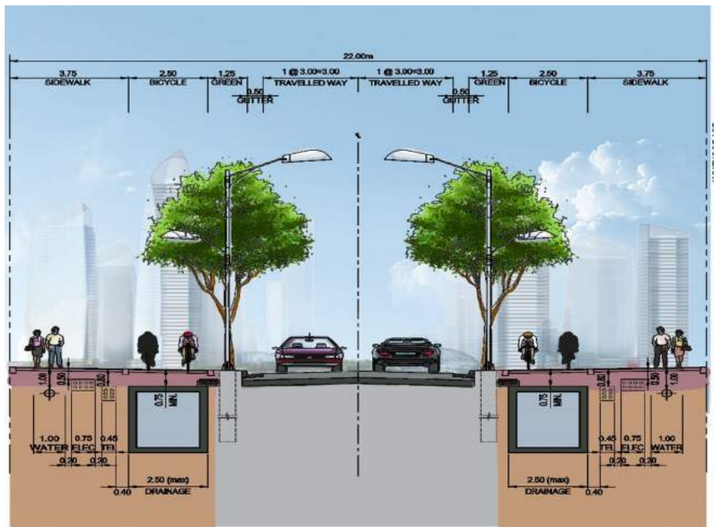
- Island
  It is a defined area between traffic lanes used for control of vehicle movements. Islands also provide an area for pedestrian refuge and traffic control devices.

- Right-of-Way
  The width of right-of-way for the complete development of an arterial street is influenced by both vehicular and non-motorized traffic demands, topography, land use, cost, intersection design, and the extent of ultimate expansion.

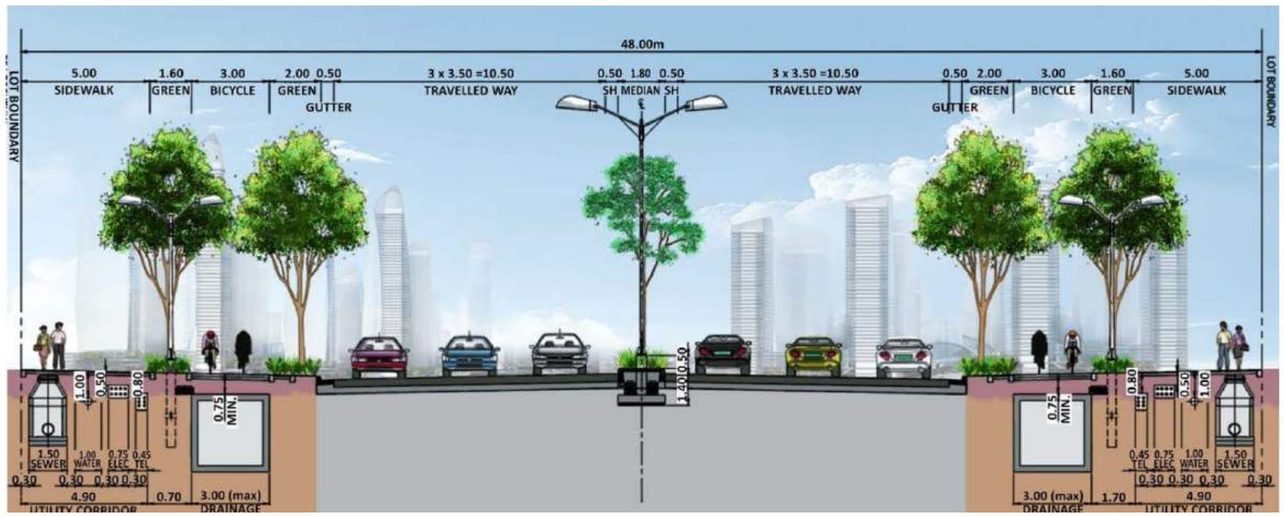
*Source: AASHTO, A Policy on Geometric Design of Highways and Streets*



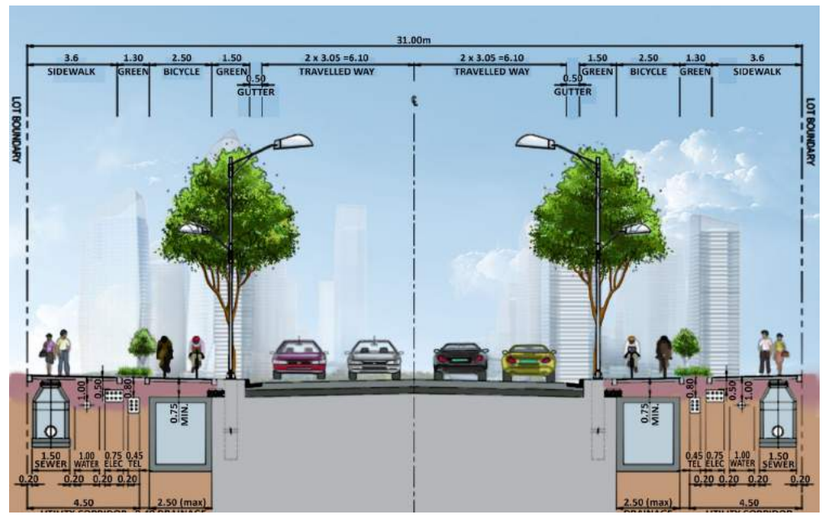

PRIMARY ARTERIAL ROAD (57M)




MINOR COLLECTOR ROAD (22M)




MINOR ARTERIAL ROAD (48M)




COLLECTOR ROAD (31M)

Figure 5.23 Typical Cross Sections for Arterial and Collector Roads *Source: The Overall NCC transport plan (as of June 2020).*

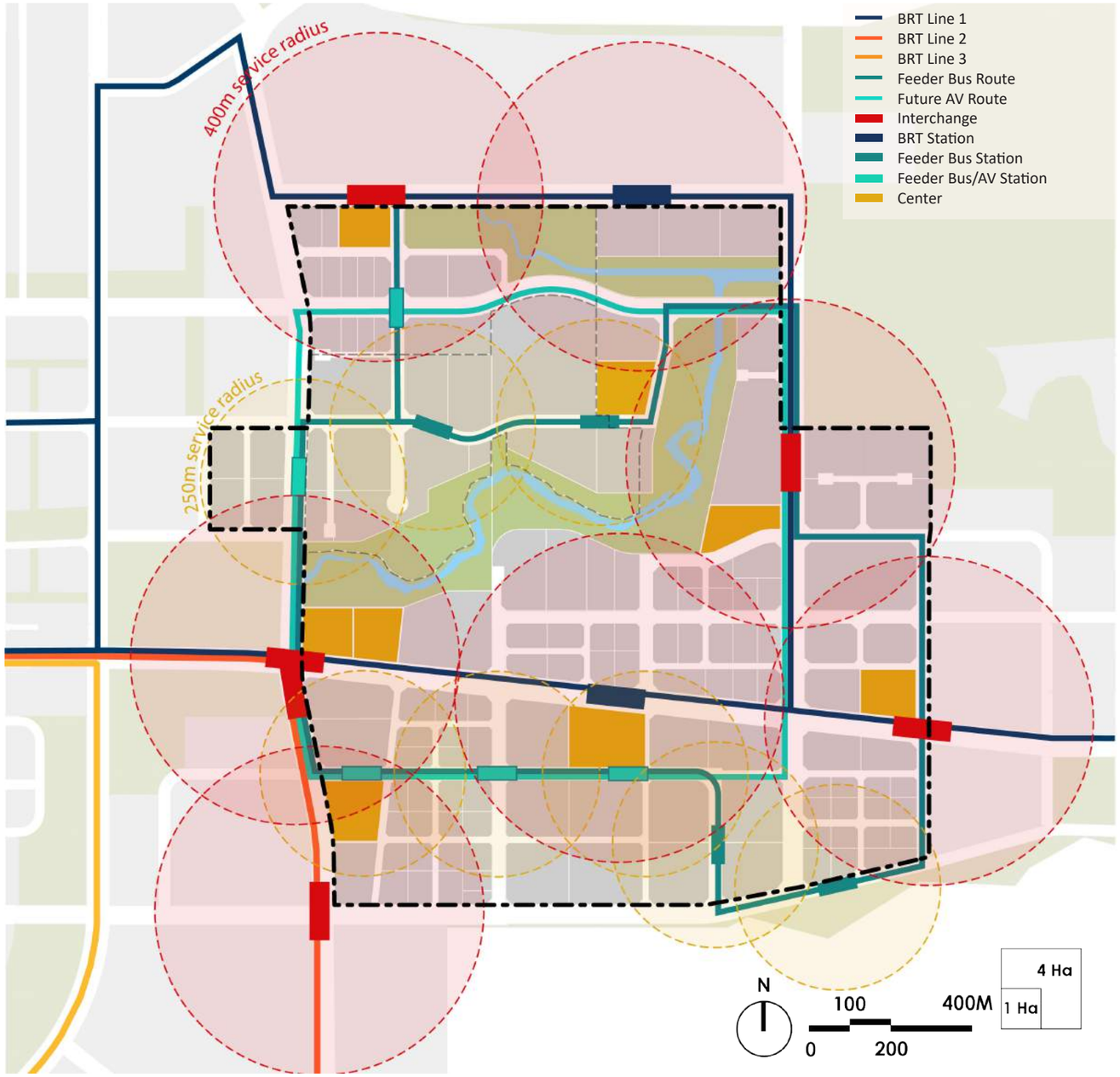



Figure 5.24 Public Transport Service Radius

# 5.4 PUBLIC TRANSPORT

## 5.4.1 NGAC'S NETWORK / SYSTEM

### Rational of a Public Transport System

The needs of public transit should be considered in the development of an urban highway improvement program.

Design and operational features of the highway that are affected by these considerations include:

1. Locations of bus stops (spacing and location with respect to intersections and pedestrian crosswalks);
2. Design of bus stops and turnouts;
3. Reservation of bus lanes; and
4. Special traffic control measures.

### BRT Network

- BRT Network based on Overall NCC Transport Plan (as of June 2020).
- BRT stations are proposed at a 400m (or 5min walk) service radius, along key pedestrian corridors and at identified centers, where possible.

### Automated Vehicle (AV) Network

- In the short term, an AV system may be proposed to supplement the center of NGAC which are not within the service radius of the BRT.

### Feeder Bus/ Guided Bus Network

- Before the construction of the Guided Bus System, a complementary feeder bus system may be introduced.
- Feeder bus and guided bus stations are proposed at a 250m (or 3min walk) service radius, along key pedestrian corridors and at identified centers.

## 5.4.2 BUS SPECIFICATIONS

The project will be utilizing the Bus Rapid Transit (BRT) system as a mode of transportation around the site. Feeder buses will also supplement the BRT system and provide easy access to the main route. The proposed BRT line will greatly impact the quality of life in the area. The system provides an eco-friendly alternative to using private cars without sacrificing safety and travel time. With that, fewer cars will be on the road which will effectively lower the emission of greenhouse gases and reduce road fatalities, crashes and injuries.

To minimize the ecological footprint of the BRT system, it is recommended to use cleaner vehicle technologies and standards to power the buses. By also limiting the use of private cars, people are encouraged to walk to their destinations from the station which will affect general public health. Faster travel time also equates to time savings and can be beneficial for the businesses surrounding the area.

### Transit Bus

Transit buses are used for servicing short to medium distance trips. They usually belong to a publicly scheduled bus service network. A transit bus is commonly equipped with simple benches and have no additional space for luggage.

Features:

- Seating capacity: 29 (+1)
- Standing room: 76
- Multiple doors
- Stop request button
- Low floor technology
- Passenger information system

### Coach Bus

Coach buses are typically designed for longer distance travel.

Features:

- Seating capacity: 44 to 49 (+1)
- Reclining seats
- Tables
- Luggage racks
- Toilets
- Entertainment
- Curtains

### Articulated Bus

An articulated bus is an extended bus that is linked in two or more sections with the use of pivoting joints. This bus type is used for mass rapid transit systems. They can be designed as single-deck or double-decker bodies.

Features:

- Seating capacity: 48 (+1)
- Standing room: 98

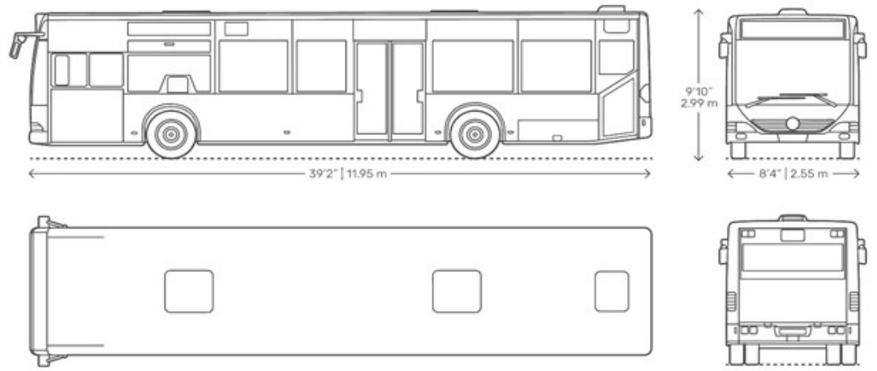



Figure 5.25 Transit Bus

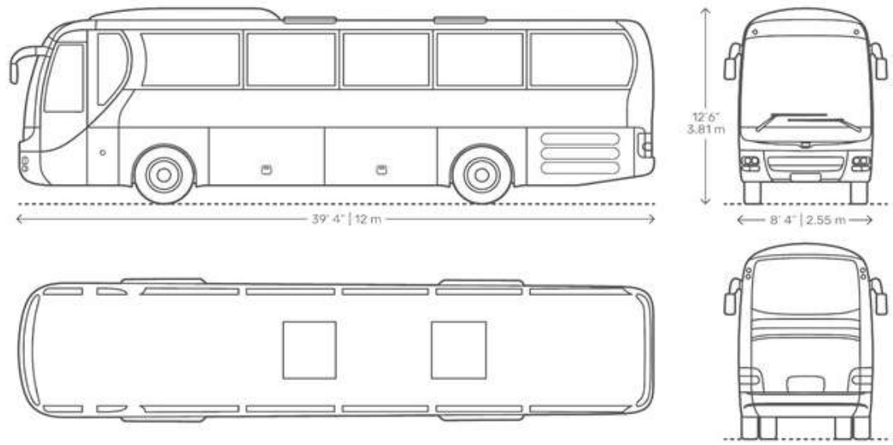



Figure 5.26 Coach Bus

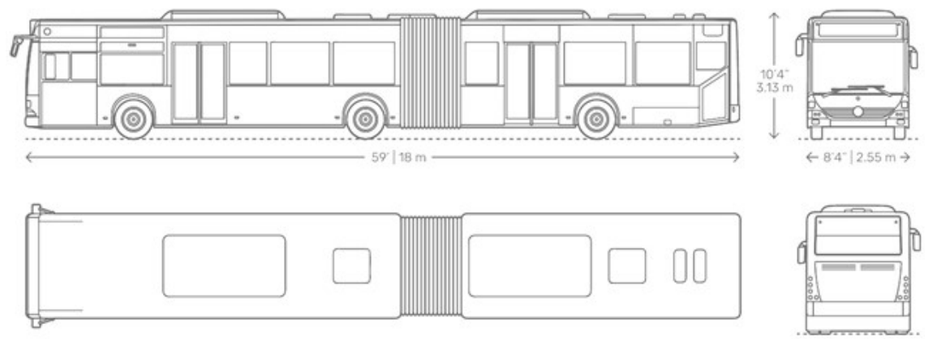



Figure 5.27 Articulated Bus *(Source: www.dimensions.com)*

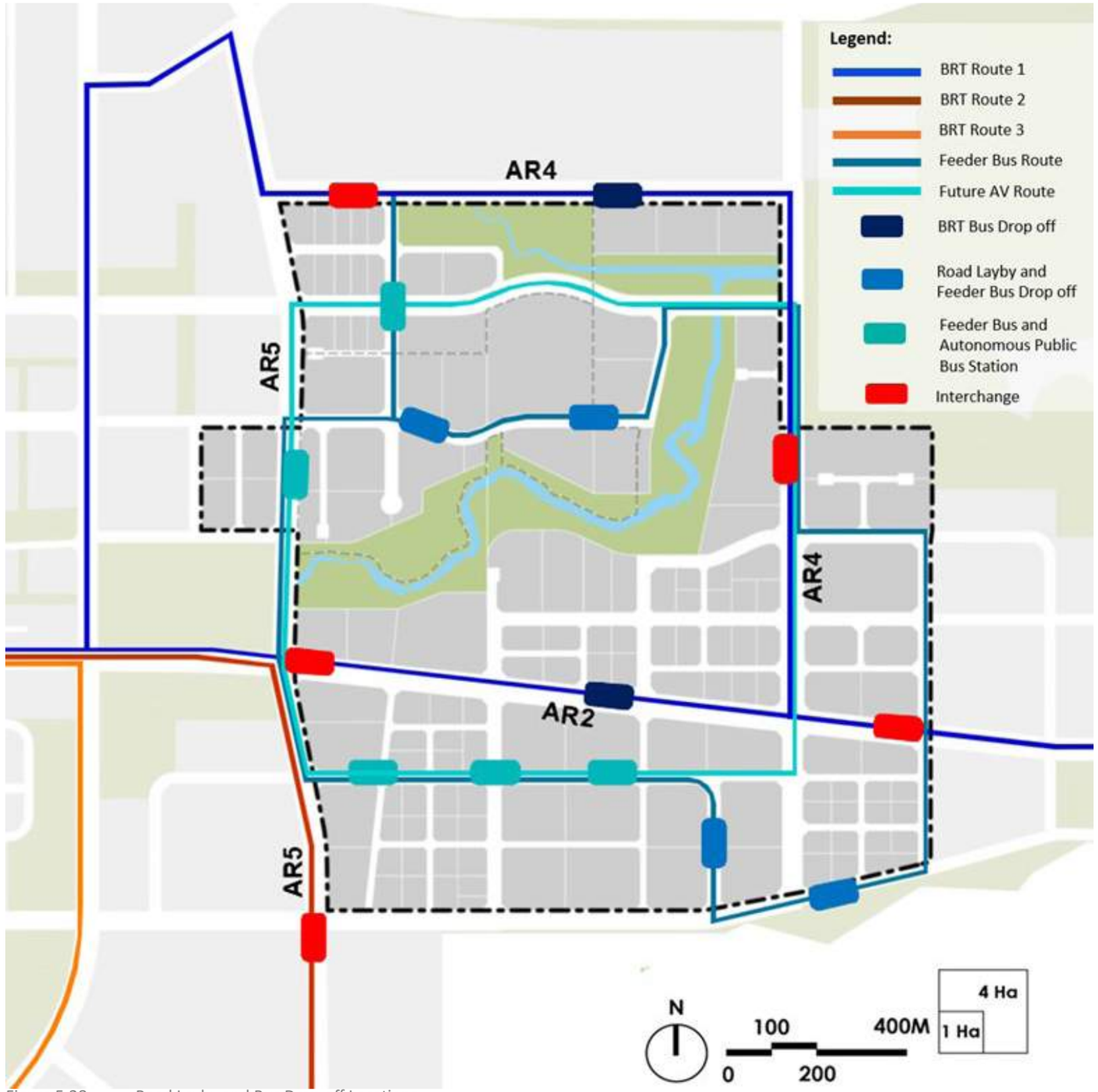



Figure 5.28 Road Layby and Bus Drop off Locations

## 5.4.3 ROAD LAYBYS AND BUS DROP OFFS

### Locations and Reference Images

BRT Bus Drop Offs/ Interchanges, Feeder Bus/ Autonomous Public Bus Stations and Road Laybys locations are based on the Overall NCC Transport Plan (as of June 2020).

Figure 5.29 BRT Bus Drop off Sample

Figure 5.30 Roadside Layby and Feeder Bus Drop off Sample

*Source: (1) WRI Brasil Cidades Sustentáveis; (2) Hanergy Thinfilm Power Group*

## 5.4.4 BUS STOP DESIGN

The design of bus stops is a crucial element in providing quality bus services. Several factors need to be carefully considered in ensuring the bus stop's accessibility and overall functionality.

### Bus Location and Spacing

The ideal spacing for bus stops is approximately 400m. Closer spacing can be provided to meet passenger needs. . Consideration should be given to improving spacing, and reviewing locations, particularly where interchange is an issue. Bus stops must be carefully planned as it affects the journey time.

Factors to consider:

- Close to main junctions without affecting road safety or junction operation
- Visibility of driver and prospective passengers to each other
- Adequate footway width
- Away from sites likely to be constructed
- Close proximity to pedestrian crossings
- Tail to tail on opposite sides of the road
- Sufficient space for a bus shelter
- Minimal walking distance between interchange stops

### Curb Height

Standard curb height is 125mm to maintain a 12 percent or 7-degree gradient for deployed ramps. A curb height of 140mm is preferred for lower ramp gradients.

### Bus Turnouts

Turnout Length: a minimum of 60 m and a maximum of 185 m based on a bus length of 15 m.
Minimum Width: 3.6 m
Minimum Width of Pedestrian Sidewalk or Platform: 2.0m

Specific location of turnouts shall take into consideration the following:

- Proximity to where pedestrians are concentrated
- Being 'downstream' of any road intersections
- A minimum spacing of 500 m in urban areas and 1000 m in rural areas
- An offset stagger of at least 30 m for turnouts on opposite sides of the road.


Figure 5.31 A bus stop in London
*Source: publictechnology.net*

### Bus Boarders

Bus boarders are usually built out from existing curb lines and provide a platform for boarding. A full width boarder should project far enough into the carriageway for the bus to avoid maneuvering past parked vehicles. For cars this should be at least 2m and a minimum of 2.6m where goods vehicles/vans are stopping.

- Full width boarder
- Alternative full width boarder layouts
- Multiple Bus Full Width Boarders
- Half width boarder
- Angled boarder

### Bus Stop Layouts

The ideal spacing for bus stops is approximately 400m. Closer spacing can be provided to meet passenger needs. Bus stops must be carefully planned as it affects the journey time.

### Bus Maneuvers

A clear exit distance of 9m is the minimum length required for buses to leave the stop and rejoin the general traffic lane without the vehicle rear overhanging the curb. The absolute minimum of 7m can be used in constrained sections.

NOTE: Information to be confirmed with the Transport Planner.

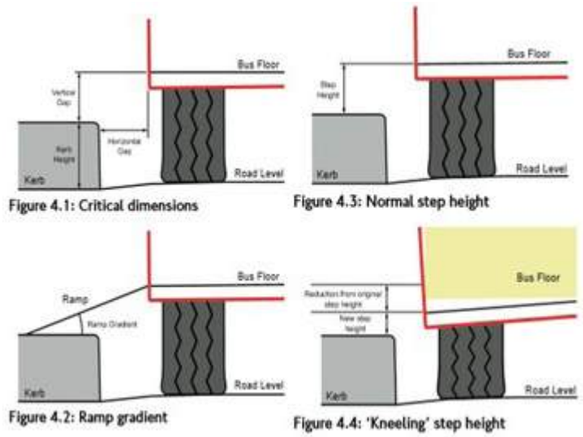



Figure 5.32 Relationship between bus and curb

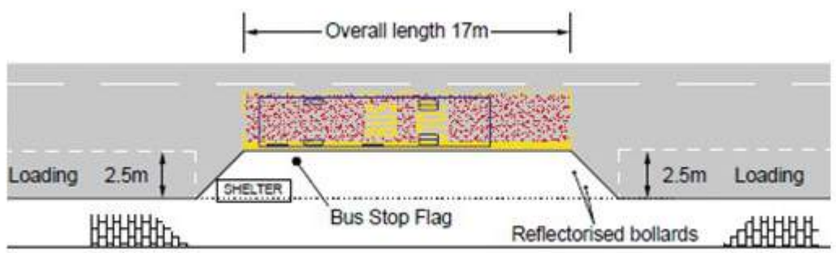



Figure 5.33 Bus stop with full width boarder

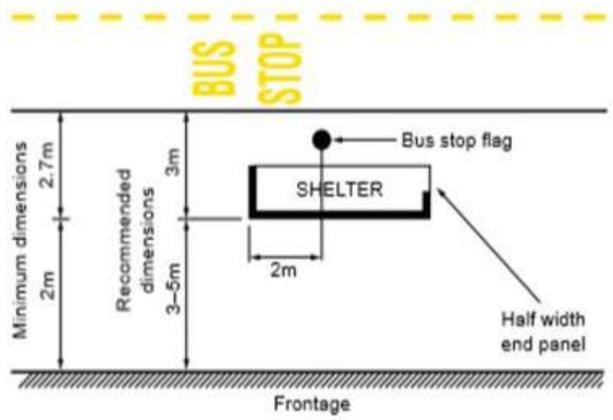



Figure 5.34 Passenger waiting area critical dimensions
*Source: Accessible Bus Stop Guidance (Transport for London)*

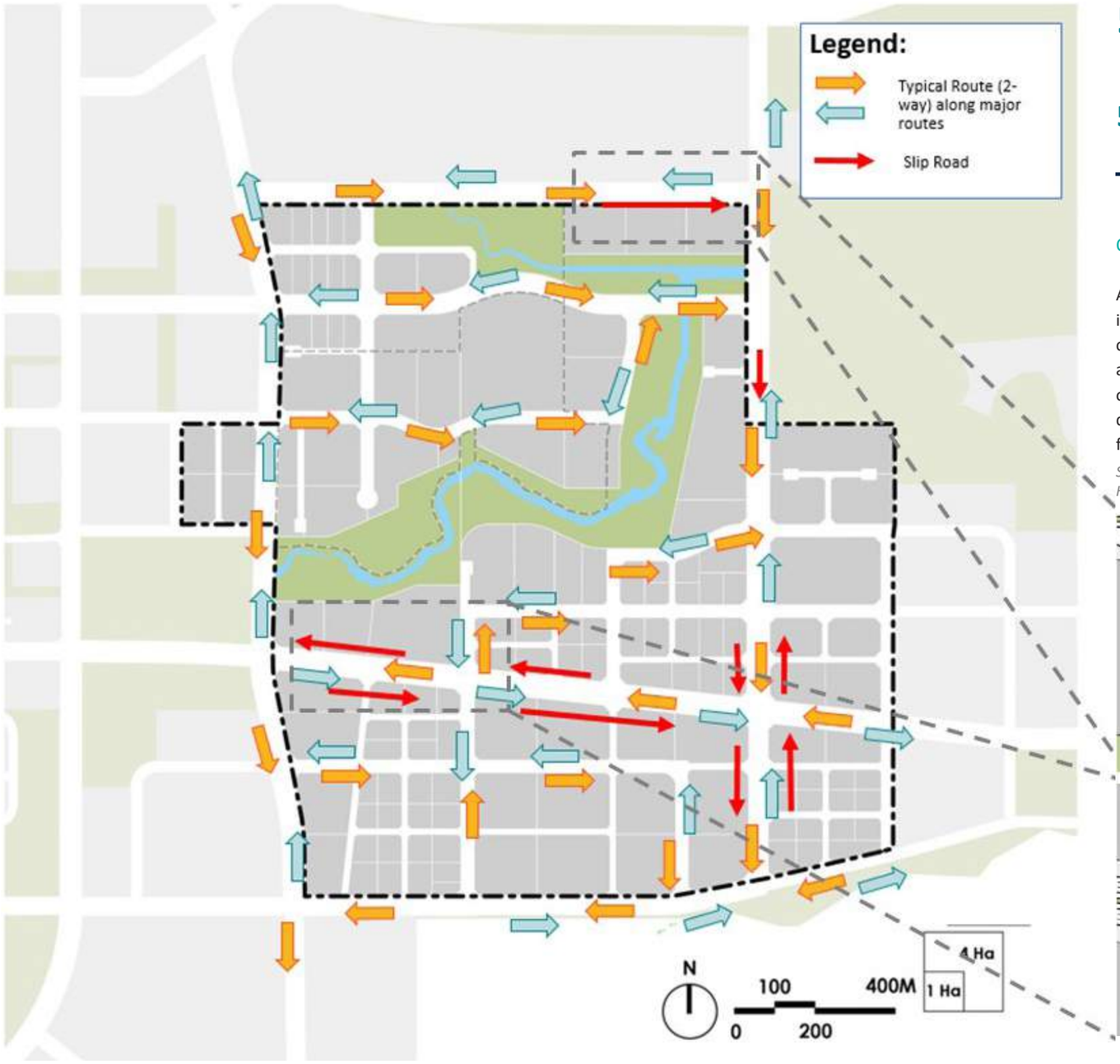



Figure 5.35 Vehicular Movement

# 5.5 VEHICULAR CIRCULATION

## 5.5.1 MOVEMENT & FLOW

### Overall and Detail Plans

A clear hierarchy of vehicular movement is provided within the NGAC district. The conflict between serving through movement and providing access to a dispersed pattern of trip origins and destinations leads to the differences and gradations in the various functional types.

*Source: AASHTO, A Policy on Geometric Design of Highways and Streets*

- Major routes are typically Two-Way.
- Regulated limitation of access is needed on arterials to enhance their primary function of mobility, whilst Slip roads are proposed to facilitate access to nearby plots.
- Primary function of local roads and streets are to provide access.

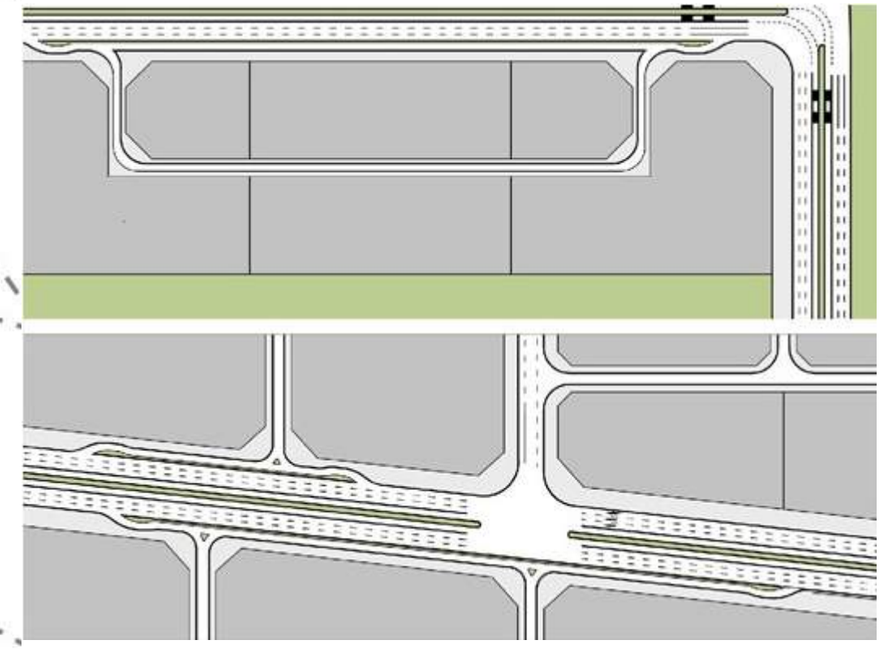


Figure 5.36 Blow-up View of Proposed Slip Roads

# 5.6 ACCESS TO PARCELS

## 5.6.1 VEHICULAR ACCESS

### Access Control

The following access controls are proposed:

- The access to a property from an arterial road shall be prohibited to maintain smooth traffic flow.
- Access to individual developments are by collector roads or local roads only, with priority access from roads of lower hierarchy.
- It is proposed to include Right-In Right-Out (RIRO) for access from collector road. RIRO is an unsignalized access physically blocked by a median to prohibit left turns.

### Vehicular Access Clearance

- The following minimum clearance for vehicular access from the edge of plot are proposed:

Distance from the turning radius is to refer to Table 5.1. For NGAC design, 25m curve radius will be employed.

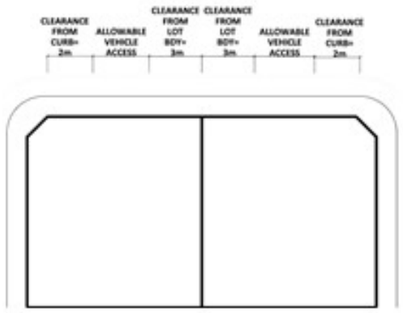



Figure 5.37 Minimum Vehicular Access Clearance from Curb and Lot

Table 5.1 Minimum Vehicular Access Clearance Distance from Edge of Plot

| | | If Vehicular Access on these road, the clearance should be | | | |
|---|---|---|---|---|---|
| | | Primary Arterial | Minor Arterial | Collector Road | Local Road |
| Intersected with | Primary Arterial | × | 50m | 50m | 25m |
| | Minor Arterial | | 25m | 25m | 25m |
| | Collector Road | | 25m | 25m | 25m |
| | Local Road | | 25m | 25m | 25m |

*Source: National Building Code of the Philippines*

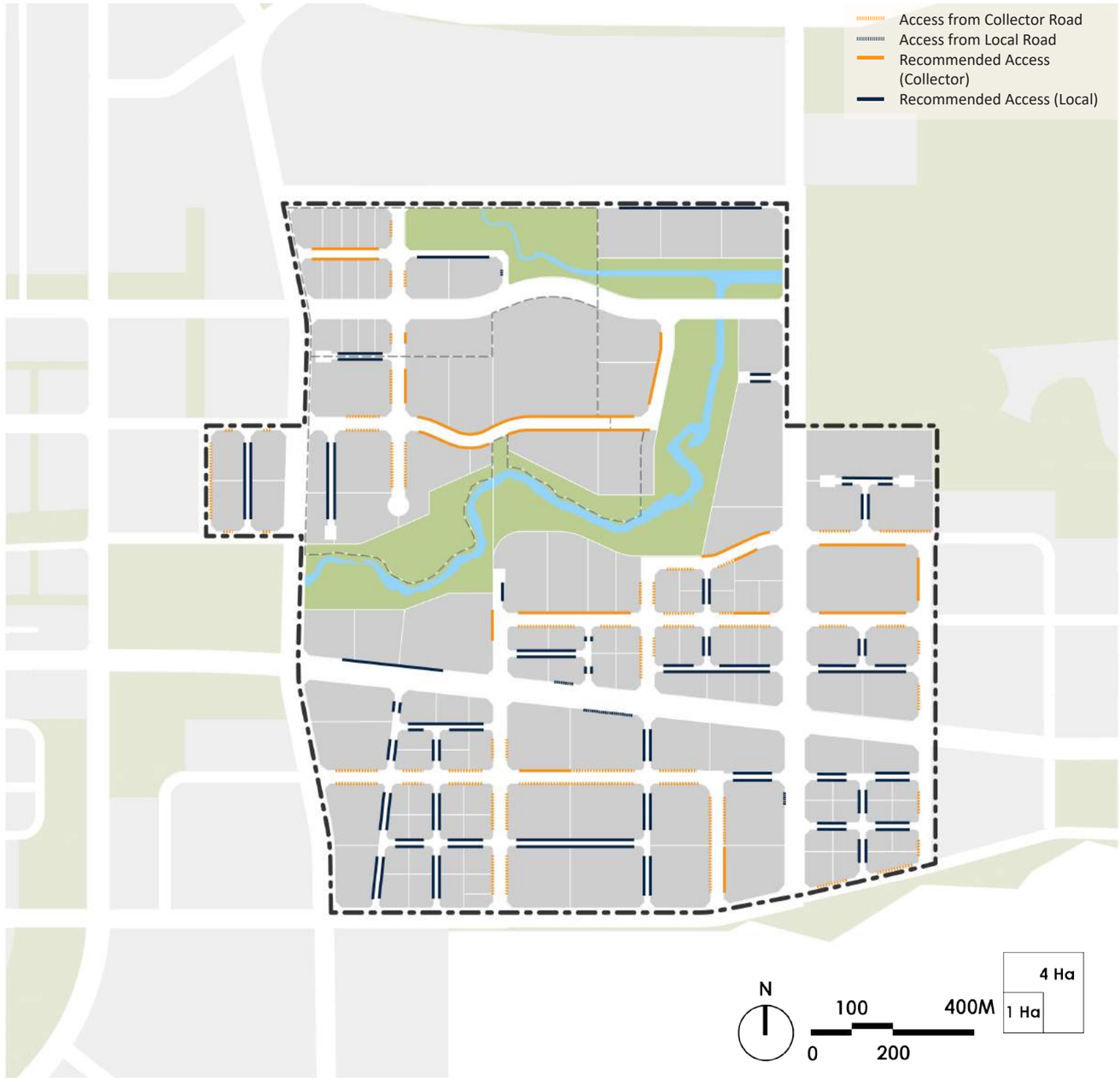



Figure 5.38 Vehicular Access Layout


Figure 5.39 Road/ Wayfinding Signage Locations

## 5.6.2 VEHICULAR ACCESS AND A CLEAR WAYFINDING AND ARRIVAL SEQUENCE

### Access and Wayfinding

A standardized road traffic system is essential to ensure that drivers acquire the information necessary to enable them to comply with road regulations and to navigate their way around the road system in a safe and efficient manner.

### Road Signage

Road Signs, includes Regulatory Signs, Warning Signs, Wayfinding Signs or Information Signs and Traffic Instruction Signs; and Pavement Markings are installed and applied at regular intervals along key pedestrian zones, at entrances / exits of transit stations and at all thoroughfares and intersections.

- Compliant with DPWH Standards..

*Source: DPWH Highway Safety Design Standards Part 2*

Figure 5.40 Example of Signage
*Source:* DPWH Highway Safety Design Standards Part 2

# 5.7 PARKING

## 5.7.1 LOCATION OF PARKING NODES

Car Parks: Centralized District Parking

- Located within 250m (3 min) from BRT Stations to encourage park-and-ride Combined parking requirements of multiple developments
- Proposed in the perimeter and away from key pedestrian corridors and green corridors, where possible
- Multi-modal, shared with Electric Vehicles (EVs), Automated Vehicle (AVs) and bikes
- Under the current code, only commercially available parking facilities located 200.0 meters from the building and permitted on-street parking may be the only ones counted as OFF-SITE/OFF-BUILDING parking compliance.

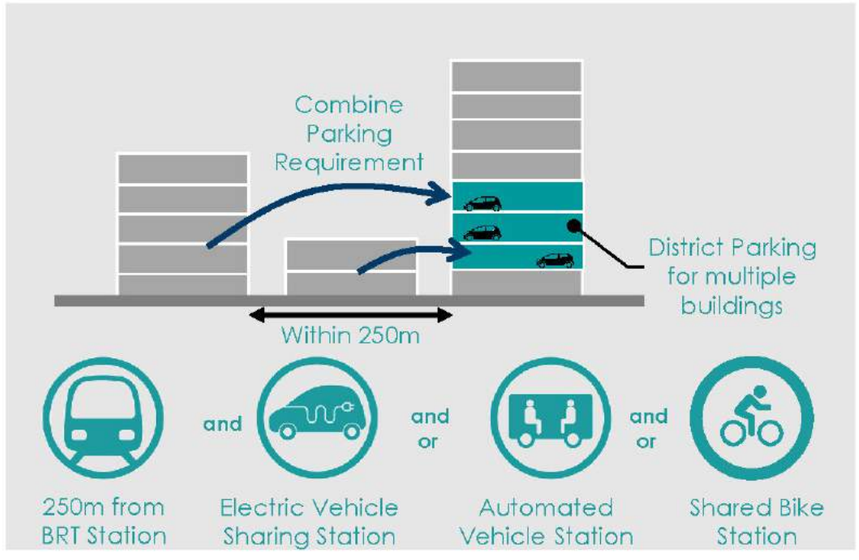



Figure 5.41 Example of District Parking

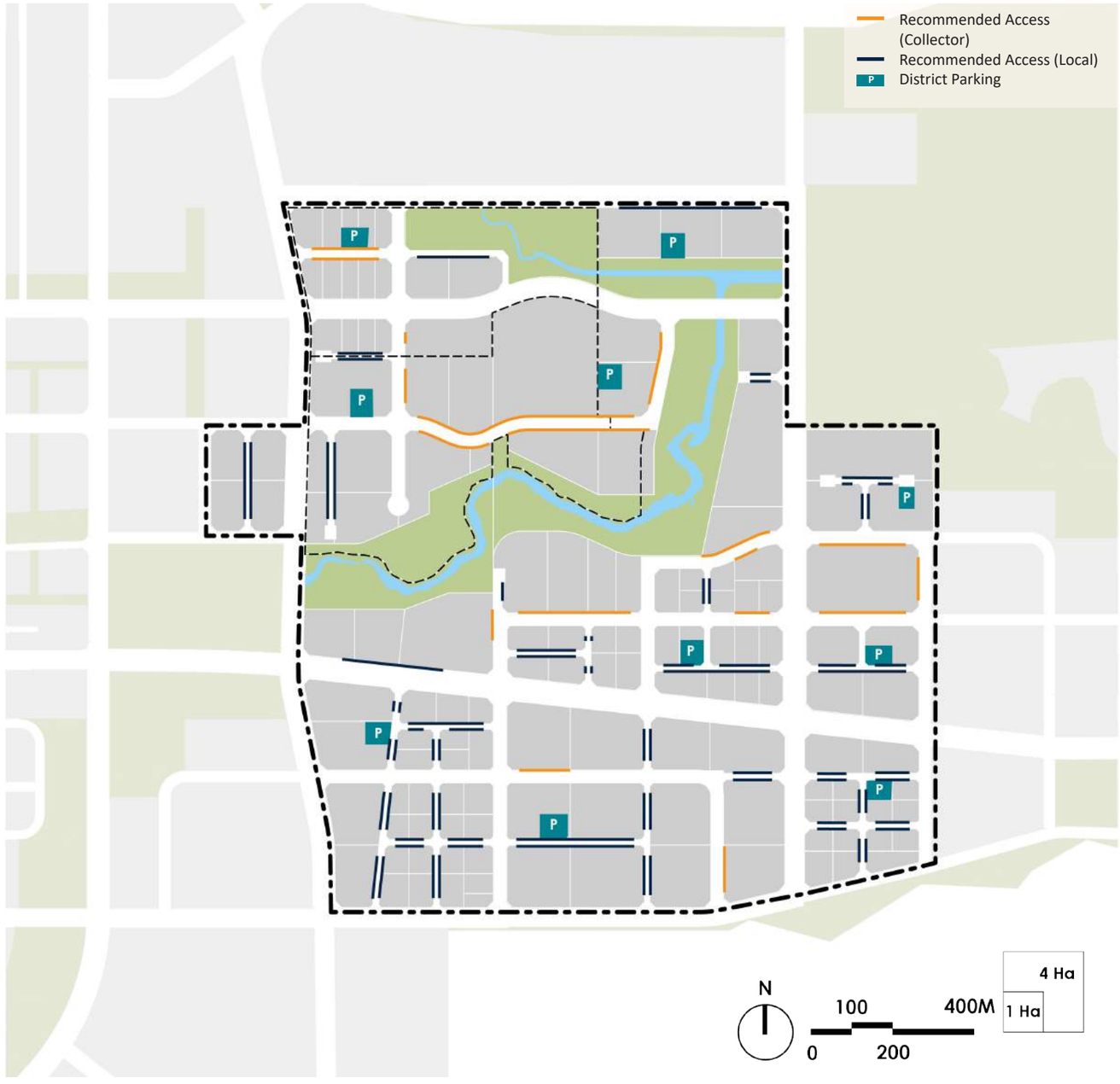



Figure 5.42 Location of Parking Nodes

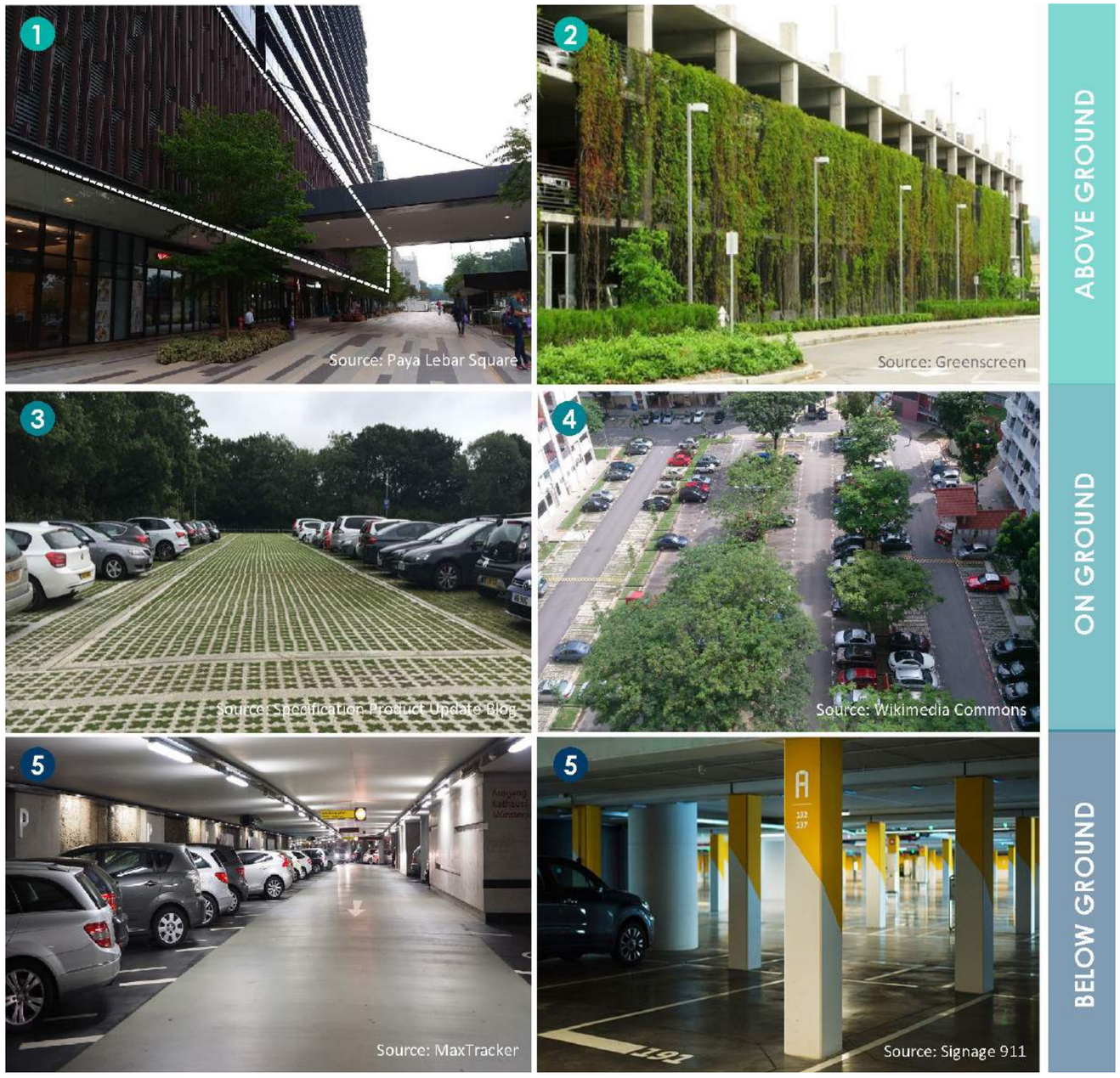



Figure 5.43 Sample Parking Type Locations

## 5.7.2 TYPE OF PARKING AREA

### Parking Type Locations

Above Ground:

1. Parking above ground floor of developments
2. Multi-storey Carparks

On Ground:

3. Park-and-Ride Facilities

Park-and-ride facilities should be located adjacent to the street or highway and be visible enough to attract use by commuters. Other considerations that affect parking lot location are impacts on surrounding land uses, available capacity of the highway connecting roads to the system, terrain

- Surface Carpark shielded from the street by greenery
- Surface Carpark shielded from the street by developments

4. On-Street Parking

A road network should be designed and developed to provide for the safe and efficient movement of vehicles operating system. Although the movement of vehicles is the primary function of a roadway network, segments of the network may, as a result of land use, also provide on-street parking. Provisions of parking lanes parallel to the curb is needed to accommodate adjacent development.

Underground:

5. Basement Carparks

*Source: AASHTO, A Policy on Geometric Design of Highways and Streets*

## 5.7.3 ALLOCATION OF PARKING NODES TO ACCOMMODATE DEMAND

Table 5.2 Required Parking based on Land Use

| PARAMETER / GUIDELINE | 2013 IRR OF BP 344 ACCESSIBILITY LAW & 2005 NATIONAL BUILDING CODE |
|---|---|
| Accessible Parking Slot Provision | • Accessible parking dimensions and provisions |
| **Required Parking based on Land Use** | |
| R3 Rowhouse (Single Family and Multi family dwelling units) | • Minimum of one (1) pooled off-street cum on-site parking slot per 4 or 6 lots, with conditions based on NBC Table VII.4, 1.1 Division A-1<br>• 1 per lot (Lots with >120 sqm) |
| R5 Residential Condominium | • 1 per 4, 6, or 8 Units, with conditions based on NBC Table VII.4, 1.2 Division A-2<br>• 1 per unit (Units with >100 sqm GFA) |
| Hotel | • 1 car parking per 3 or 7 rooms, with conditions based on NBC Table VII.4, 2.1 Division B-1<br>• 2 tourist bus parking<br>• Minimum loading slots based on NBC Table VII.4, 2.1 Division B-1 |
| Residential Hotel | • 1 car slot per 5 units<br>• 1 bus parking slot per 60 rooms/units<br>• (conditions based on NBC Table VII.4, 2.1 Division B-1) |
| General Institutional (GI) - Educational | • 1 car slot per 5 classrooms<br>• 1 off-RROW (or off-street) passenger loading space for 2 queued jeepney / shuttle slots<br>• 1 school bus slot per 100 students |
| Health Facilities | • Public hospital (with conditions based on NBC Table VII.4, 4.2 Division D-2):<br>• 1 car parking slot per 25 beds<br>• 1 passenger loading space for 2 queued jeepney / shuttle slots<br>• 1 loading slot for articulated truck/vehicle<br>• 1 loading slot for standard truck per 5,000 sqm of GFA |
| | • Private hospital (with conditions based on NBC Table VII.4, 4.2 Division D-2):<br>• 1 car parking slot per 12 beds<br>• 1 passenger loading space for 2 queued jeepney / shuttle slots<br>• 1 loading slot for articulated truck/vehicle<br>• 1 loading slot for standard truck per 5,000 sqm of GFA |

| PARAMETER / GUIDELINE | NATIONAL BUILDING CODE (2005) |
|---|---|
| Required Parking based on Land Use | |
| Utilities, Transportation and Services (UTS): Terminals, multi-modals and inter-modals | • 1 car slot per 500 sqm of GFA<br>• 1 passenger loading space for 2 queued jeepney / shuttle slots or 2 queued bus slots (as applicable)<br>(with conditions based on NBC Table VII.4, 5.1 Division E-1) |
| Utilities, Transportation and Services (UTS): Transit stations | • 1 passenger loading space for 4 queued jeepney / shuttle slots or 3 queued bus slots (as applicable)<br>(with conditions based on NBC Table VII.4, 5.1 Division E-1) |
| C-1 Commercial (Neighborhood shopping center/ supermarket) | • 1 car slot per 100 sqm of shopping floor area<br>(with conditions based on NBC Table VII.4, 5.2 Division E-2) |
| C-2 Public Market | • 1 customer jeepney/shuttle parking slot per 150 sqm. market floor area<br>• 1 vendor jeepney/shuttle parking slot per 300 sqm. market floor area<br>• 1 off-RROW terminal for 2 jeepneys and 6 tricycle for 1000 sqm. market floor area |
| C-2 Restaurant, fast food centers, bars and beer houses | • 1 car slot per 30 sqm of customer area |
| C-2 Nightclubs, super clubs and theatre restaurants | • 1 car slot per 20 sqm of customer area |
| C-3 Aircraft hangars, open parking carports and garages, etc. | • 1 car slot per 1000 sq. m of GFA<br>1 bus slot per 100 worker<br>1 off-RROW passenger loading space for 2 queued jeepney/shuttle slots |
| Units located in office, commercial or mixed-use condominium buildings (R-MU) | • 1 per 1 or 2 Units, with conditions based on NBC Table VII.4, 1.2 Division E-2<br>• 1 per 70 sqm (Units with >70 sqm GFA) , with conditions based on NBC Table VII.4, 1.2 Division E-2 |
| Public recreational assembly buildings (e.g., theaters / cinemas, auditoria, etc.) (CUL) | • 1 car slot<br>• 1 jeepney/ shuttle slot per every 50 sqm of spectator area<br>• 1 bus parking per 200 spectators<br>(with conditions based on NBC Table VII.4, 8.1 Division H-1) |

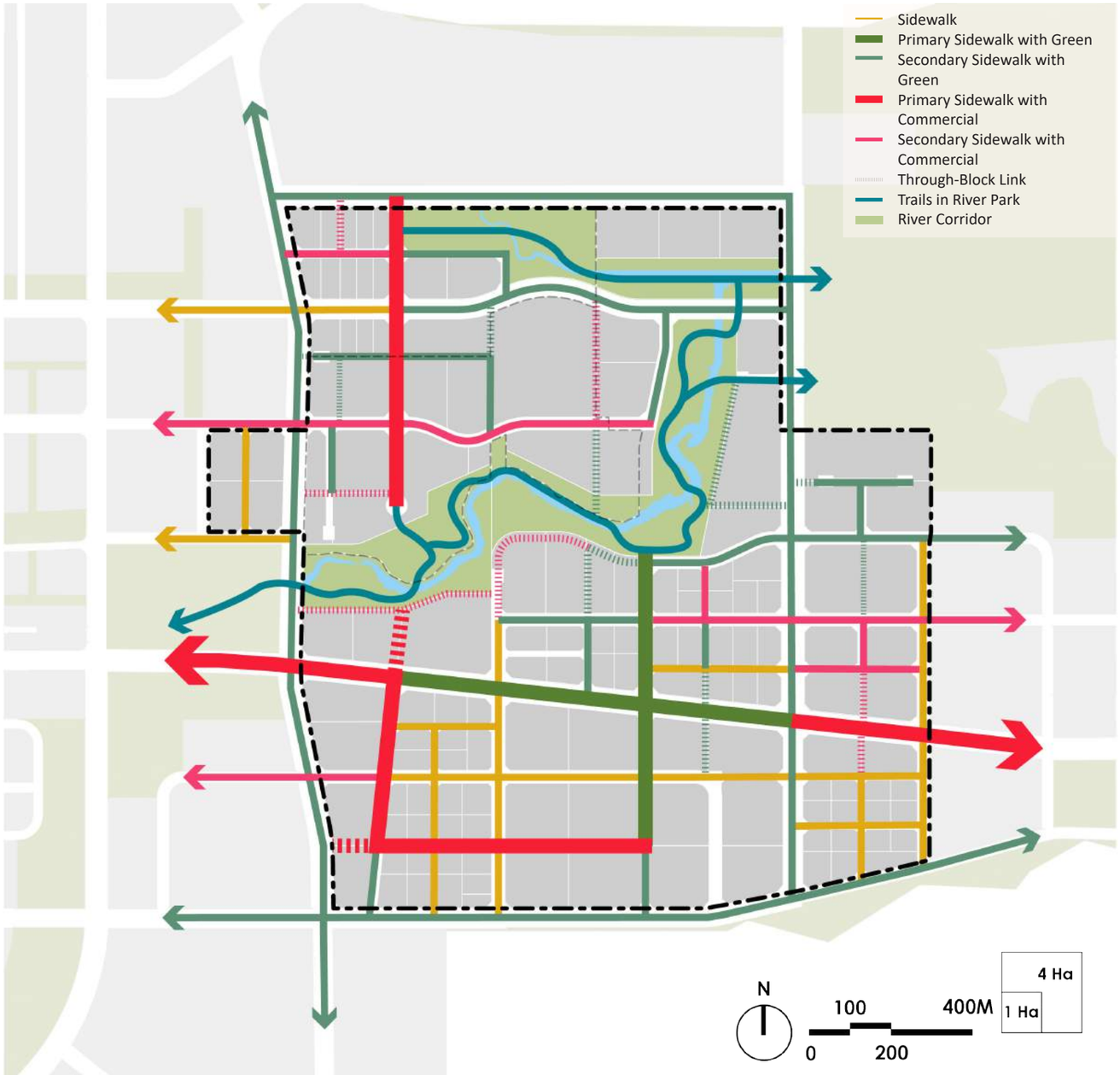



Figure 5.44 Pedestrian Network

# 5.8 NON-MOTORIZED TRANSPORT

## 5.8.1 PEDESTRIAN NETWORK

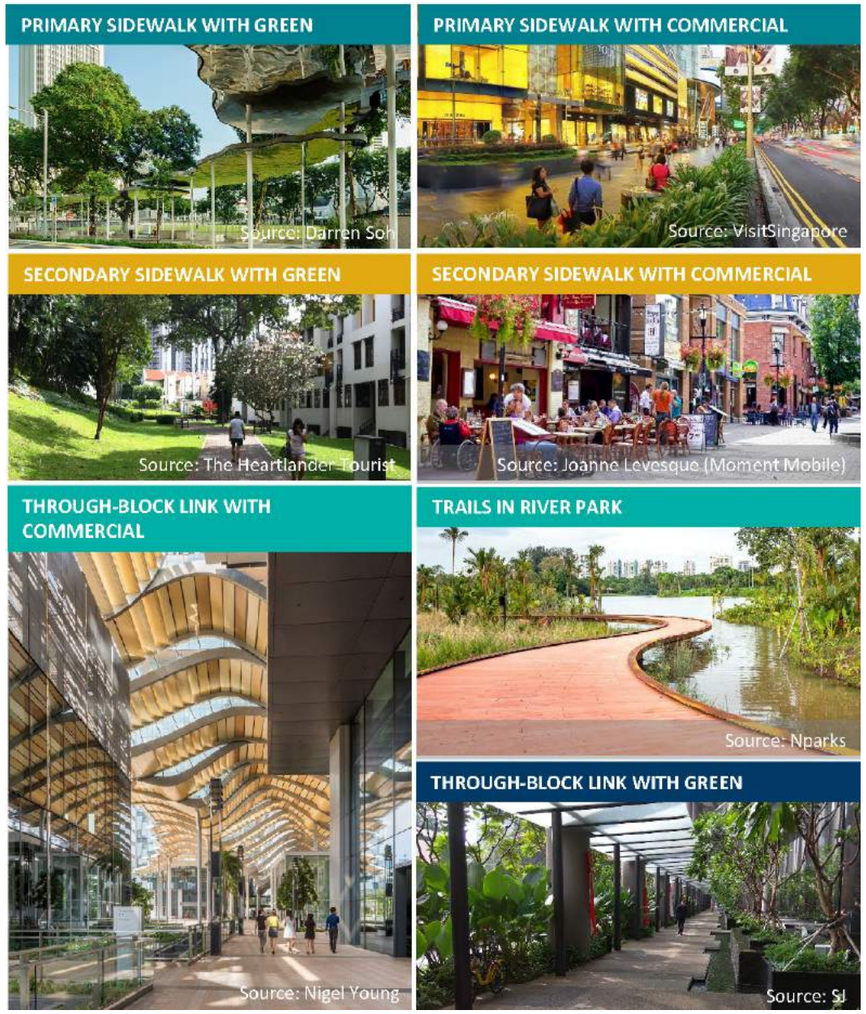



Figure 5.45 Sample Pedestrian Networks

## 5.8.2 CYCLING NETWORK

### Non-motorized Transportation (NMT) Categories

Citywide Bicycle Lanes:

- 3.0m Width lanes along Arterial Roads and 2.5m Width lanes along Collector Roads.
- Cycling routes are integrated with Through-Block Link pedestrian network to increase the accessibility of each plot.

Bike Trails:

- Proposed recreational bike trails along the River Corridor.

Bicycle Sharing Station (Center):

- Bicycle Sharing Station also provide bicycle rack for bike parking.
- Proposed near open spaces or transport nodes to ensure seamless urban mobility.


Figure 5.46 Sample Bicycle Sharing Station, Lanes and Trails

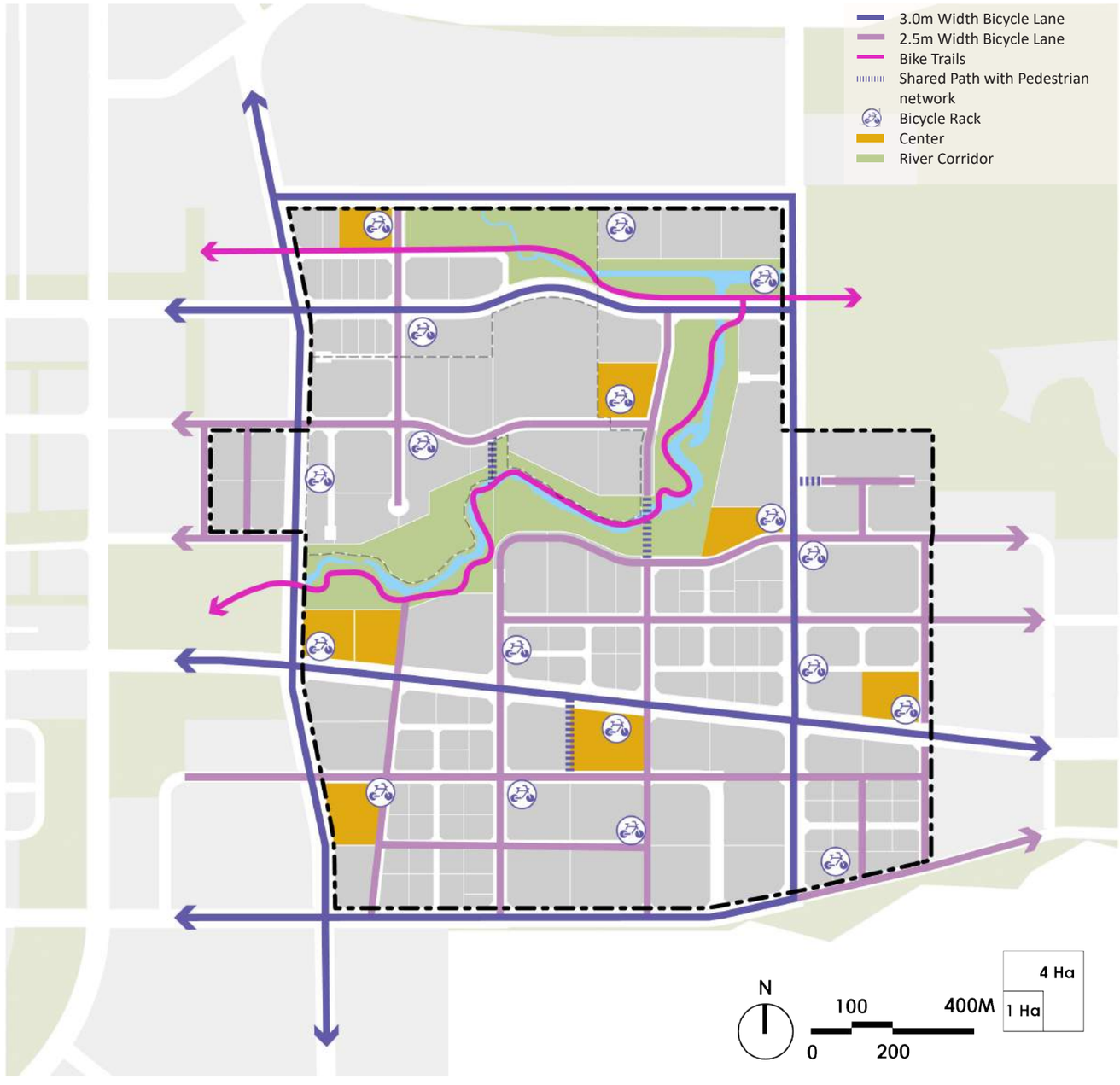



Figure 5.47 NMT Network


Figure 5.48 Example of Bicycle Parking

*Sources: (1) San Francisco Bicycle Coalition (Flickr); (2) Sara Maroto Hebrero (Behance)*

## 5.8.3 BICYCLE FACILITIES

### Bicycle Facilities

Places to park, facilities to secure a cycle, lockers for personal possessions, and shower facilities.

- All developments shall comply with the minimum bicycle parking space requirements and provision of the End-of-Trip facilities can also qualify for GFA exemption are in the Table 5.3. This is to encourage locators to provide End-of-Trip facilities to better meet the needs of cyclists. Locators can submit their proposals for the Declarant's evaluation.

- Bicycle parking spaces provided will be exempted from GFA computation. The GFA exemption will also apply to surplus provision of bicycle parking spaces above minimum requirements if assessed by the Declarant to be reasonable, depending on the context of the development.

### Bicycle Parking

- Bicycle parking is encouraged at the entrances of larger developments, at parks and public facilities, and transit stations and stop.

- Bicycle parking and racks may be integrated with other public furniture elements.

- Where possible, bicycle parking shall be sheltered and secure, such as through the provision of bicycle shelters and bicycle lockers.

- The provision of wayfinding signages to major destinations, transits stops and stations, and other guide maps catered to cyclist is recommended at bicycle parking areas.

Table 5.3 Bicycle Facilities and GFA Exemption

| PROPOSED USE | MINIMUM BICYCLE PARKING SPACE REQUIREMENT | END-OF-TRIP FACILITIES THAT WILL BE EXEMPTED FROM GFA COMPUTATION |
|---|---|---|
| **Residential** | | |
| Single-Family Housing<br>Multi-Family Housing<br>Condotel<br>Ancillary Residential Facility<br>Dormitory<br>Workers' Accommodation | 1 bicycle parking space for every 4 dwelling units | No GFA exemption for bicycle supporting facilities as shower/changing rooms are to be provided for within the home, or as part of the clubhouse facilities |
| **Commercial** | | |
| Small Retail Shops<br>Commercial Retail & Services, Financial Institutions/Bank<br>Shopping Center/Mall, Hyper-mart<br>Office<br>Service Apartment<br>Private Recreational Club, Holiday Chalet, Private Sports Club, Private Health Club<br>Exhibition or Convention Hall | 1 bicycle parking space for every 200m2 of floor area, for floor area up to 15,000 $m^2$, and 1 bicycle parking space for every subsequent 600$m^2$ of floor area, for floor area in excess of 15,000$m^2$ | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |
| Home Office | 1 bicycle parking space for every 4 dwelling units | No GFA exemption for bicycle supporting facilities as shower/changing rooms are to be provided for within the home, or as part of the clubhouse facilities |
| **Industrial** | | |
| R&D Facility<br>Automotive Repair Workshop<br>Motor Vehicle Showroom<br>Warehouse<br>Non-Pollutive Industrial Use<br>Industrial Uses Not Specified Above | 1 bicycle parking space for every 150$m^2$ of floor area, for floor area up to 15,000$m^2$, and 1 bicycle parking space for every subsequent 1,000$m^2$ of floor area, for floor area in excess of 15,000$m^2$ | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |
| **Public Facilities** | | |
| Community Center<br>Post Office<br>Public Library<br>Museum, Art Gallery, Concert Hall & Opera House, Cultural Center<br>Government Facility<br>Place of Worship | 1 bicycle parking space for every 150$m^2$ of floor area, for floor area up to 15,000$m^2$ and 1 bicycle parking space for every subsequent 500$m^2$ of floor area, for floor area in excess of 15,000$m^2$ | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |
| **Sports and Recreation** | | |
| Place of Recreation, Sports or Culture, Multi-Purpose Arena<br>Sport Complex, Stadium<br>Sports Club, Gym | 1 bicycle parking space for every 150$m^2$ of floor area, for floor area up to 15,000$m^2$ and 1 bicycle parking space for every subsequent 500$m^2$ of floor area, for floor area in excess of 15,000$m^2$ | No GFA exemption for bicycle supporting facilities as shower/changing rooms/lockers should be provided as part of the development. |

| PROPOSED USE | MINIMUM BICYCLE PARKING SPACE REQUIREMENT | END-OF-TRIP FACILITIES THAT WILL BE EXEMPTED FROM GFA COMPUTATION |
|---|---|---|
| **Educational Facilities** | | |
| Kindergarten, Day Care Center<br>Primary, Secondary and High Schools (K-12) | 1 bicycle parking per 5 pupils | No GFA exemption for bicycle supporting facilities as shower/ changing rooms/ lockers should be provided as part of the development |
| Polytechnic, University, Vocational School | 2 bicycle parking per 200 students | |
| **Food and Entertainment Facilities** | | |
| Night Club, Disco House & Dance Hall, KTV, Music Bar, Cocktail Lounge<br>Hotel<br>Place of Public Entertainment, Amusement Hall & Parlor, Entertainment Arcade, Cinema & Theater<br>Restaurant<br>Fast Food, Takeaway Food | 1 bicycle parking space for every 100m² of floor area | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |
| **Healthcare Facilities** | | |
| Hospital, Health Institution | 1 bicycle parking per 15 beds | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |
| Sanitaria, Nursery or Convalescent Homes | 1 bicycle parking per 7 beds | |
| Clinic/Polyclinic, Dental Clinic | 1 bicycle parking space for every 150m² of floor area | |
| **Infrastructure** | | |
| Public Transport Station (BRT/LRT Station and Line)<br>Public Transport Hub (Rail Station, Terminal, Bus Interchange) | 1 bicycle parking space for every 150m² of floor area, for floor area up to 15,000m² and 1 bicycle parking space for every subsequent 500m² of floor area, for floor area in excess of 15,000m² | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |

Table 5.4 Car and Bicycle Parking Allocation

| Zone | Plot ID | Plot Area | GFA | Car Parking Factor | Required Car Parking | Bicycle Factor | Required Bike Parking |
|---|---|---|---|---|---|---|---|
| **R3 High Density Residential Zone** | | | | | | | |
| Zone D | D-01-01 | 22,870 | 68,610 | 333.0 | 206 | 143 | 480 |
| Zone D | D-01-02 | 22,035 | 66,104 | 333.0 | 199 | 143 | 462 |
| Zone D | D-02-01 | 38,718 | 116,154 | 333.0 | 349 | 143 | 812 |
| Zone D | D-02-02 | 18,001 | 54,004 | 333.0 | 162 | 143 | 378 |
| Zone D | D-02-03 | 20,604 | 61,812 | 333.0 | 186 | 143 | 432 |
| **R-MU Mixed Use Residential Zone** | | | | | | | |
| Zone A | A-03-01 | 12,737 | 50,948 | 173.0 | 294 | 229 | 222 |
| Zone A | A-03-02 | 15,937 | 63,748 | 173.0 | 368 | 229 | 278 |
| Zone B | B-01-02 | 18,803 | 75,210 | 173.0 | 435 | 229 | 328 |
| Zone B | B-01-03 | 18,494 | 73,977 | 173.0 | 428 | 229 | 323 |
| Zone B | B-01-04 | 18,382 | 73,526 | 173.0 | 425 | 229 | 321 |
| Zone B | B-02-02 | 17,388 | 69,550 | 173.0 | 402 | 229 | 304 |
| Zone B | B-02-03 | 17,767 | 71,066 | 173.0 | 411 | 229 | 310 |
| Zone D | D-01-08 | 25,563 | 102,254 | 173.0 | 591 | 229 | 447 |
| Zone D | D-01-09 | 19,450 | 77,799 | 173.0 | 450 | 229 | 340 |
| Zone E | E-02-10 | 15,051 | 60,203 | 173.0 | 348 | 229 | 263 |
| Zone G | G-01-01 | 14,239 | 56,955 | 173.0 | 329 | 229 | 249 |
| Zone G | G-01-02 | 14,239 | 56,955 | 173.0 | 329 | 229 | 249 |
| Zone G | G-02-01 | 12,946 | 51,782 | 173.0 | 299 | 229 | 226 |
| Zone G | G-02-02 | 10,430 | 41,720 | 173.0 | 241 | 229 | 182 |
| **C2 City Level Commercial Zone** | | | | | | | |
| Zone C | C-02-02 | 8,404 | 25,211 | 75.0 | 336 | 274 | 92 |
| Zone C | C-02-05 | 23,037 | 69,110 | 75.0 | 921 | 418 | 165 |
| Zone C | C-02-10 | 15,131 | 30,263 | 75.0 | 404 | 301 | 101 |
| Zone D | D-01-07 | 15,829 | 47,488 | 75.0 | 633 | 368 | 129 |
| Zone E | E-01-01 | 19,817 | 59,450 | 75.0 | 793 | 399 | 149 |
| Zone E | E-01-02 | 21,504 | 64,513 | 75.0 | 860 | 410 | 157 |
| Zone E | E-02-01 | 19,749 | 59,246 | 75.0 | 790 | 398 | 149 |
| Zone G | G-01-03 | 14,940 | 44,820 | 75.0 | 598 | 359 | 125 |
| Zone G | G-01-04 | 17,010 | 51,029 | 75.0 | 680 | 378 | 135 |
| **C3 Central Business Zone** | | | | | | | |
| Zone C | C-02-09 | 14,566 | 58,262 | 102.0 | 571 | 396 | 147 |
| **GI-E General Institutional-Education Zone** | | | | | | | |
| Zone C | C-02-11 | 39,820 | 39,820 | 642.0 | 62 | 25 | 1593 |
| Zone D | D-01-06 | 43,866 | 43,866 | 642.0 | 68 | 25 | 1755 |
| Zone D | D-04-01 | 46,192 | 46,192 | 642.0 | 72 | 25 | 1848 |

| Zone | Plot ID | Plot Area | GFA | Car Parking Factor | Required Car Parking | Bicycle Factor | Required Bike Parking |
|---|---|---|---|---|---|---|---|
| **GI-C General Institutional Civic Zone** | | | | | | | |
| Zone A | A-01-01 | 7,122 | 14,244 | 287.0 | 50 | 150 | 95 |
| Zone A | A-01-02 | 4,849 | 9,698 | 287.0 | 34 | 150 | 65 |
| Zone A | A-01-03 | 4,052 | 8,104 | 287.0 | 28 | 150 | 54 |
| Zone A | A-01-04 | 4,052 | 8,104 | 287.0 | 28 | 150 | 54 |
| Zone A | A-01-05 | 4,131 | 8,261 | 287.0 | 29 | 150 | 55 |
| Zone A | A-02-01 | 4,503 | 9,005 | 287.0 | 31 | 150 | 60 |
| Zone A | A-02-02 | 4,823 | 9,645 | 287.0 | 34 | 150 | 64 |
| Zone A | A-02-03 | 4,030 | 8,060 | 287.0 | 28 | 150 | 54 |
| Zone A | A-02-04 | 4,030 | 8,060 | 287.0 | 28 | 150 | 54 |
| Zone A | A-02-05 | 4,107 | 8,214 | 287.0 | 29 | 150 | 55 |
| Zone A | A-04-01 | 6,682 | 13,364 | 287.0 | 47 | 150 | 89 |
| Zone A | A-04-02 | 3,659 | 7,318 | 287.0 | 25 | 150 | 49 |
| Zone A | A-04-03 | 3,659 | 7,318 | 287.0 | 25 | 150 | 49 |
| Zone A | A-04-04 | 3,821 | 7,642 | 287.0 | 27 | 150 | 51 |
| Zone A | A-04-05 | 29,577 | 59,154 | 287.0 | 206 | 314 | 188 |
| Zone A | A-05-01 | 19,978 | 39,955 | 287.0 | 139 | 267 | 150 |
| Zone A | A-05-02 | 16,878 | 33,757 | 287.0 | 118 | 245 | 138 |
| Zone C | C-01-01 | 11,248 | 22,496 | 287.0 | 78 | 196 | 115 |
| Zone C | C-01-02 | 11,247 | 22,493 | 287.0 | 78 | 196 | 115 |
| Zone C | C-01-03 | 11,467 | 22,933 | 287.0 | 80 | 198 | 116 |
| Zone C | C-01-04 | 11,035 | 22,071 | 287.0 | 77 | 193 | 114 |
| Zone C | C-02-01 | 9,646 | 19,292 | 287.0 | 67 | 178 | 108 |
| Zone D | D-01-10 | 11,190 | 22,379 | 287.0 | 78 | 195 | 115 |
| Zone D | D-01-11 | 8,879 | 17,758 | 287.0 | 62 | 168 | 106 |
| Zone D | D-03-01 | 6,667 | 13,334 | 287.0 | 46 | 150 | 89 |
| Zone D | D-03-02 | 3,646 | 7,292 | 287.0 | 25 | 150 | 49 |
| Zone D | D-03-03 | 4,211 | 8,421 | 287.0 | 29 | 150 | 56 |
| Zone D | D-03-04 | 8,765 | 17,529 | 287.0 | 61 | 167 | 105 |
| Zone D | D-03-05 | 3,713 | 7,425 | 287.0 | 26 | 150 | 50 |
| Zone D | D-03-06 | 3,713 | 7,425 | 287.0 | 26 | 150 | 50 |
| Zone D | D-03-07 | 4,800 | 9,600 | 287.0 | 33 | 150 | 64 |
| Zone D | D-03-08 | 4,568 | 9,135 | 287.0 | 32 | 150 | 61 |
| Zone E | E-01-03 | 9,037 | 18,073 | 287.0 | 63 | 170 | 106 |
| Zone E | E-01-04 | 6,231 | 12,462 | 287.0 | 43 | 150 | 83 |
| Zone E | E-01-05 | 4,081 | 8,162 | 287.0 | 28 | 150 | 54 |
| Zone E | E-01-06 | 6,387 | 12,774 | 287.0 | 45 | 150 | 85 |
| Zone E | E-01-07 | 4,600 | 9,200 | 287.0 | 32 | 150 | 61 |
| Zone E | E-01-08 | 6,380 | 12,760 | 287.0 | 44 | 150 | 85 |
| Zone E | E-01-09 | 5,846 | 11,693 | 287.0 | 41 | 150 | 78 |
| Zone E | E-01-10 | 4,000 | 8,000 | 287.0 | 28 | 150 | 53 |

| Zone | Plot ID | Plot Area | GFA | Car Parking Factor | Required Car Parking | Bicycle Factor | Required Bike Parking |
|---|---|---|---|---|---|---|---|
| | | | GI-C General Institutional Civic Zone | | | | |
| Zone E | E-02-02 | 4,650 | 9,300 | 287.0 | 32 | 150 | 62 |
| Zone E | E-02-03 | 5,253 | 10,506 | 287.0 | 37 | 150 | 70 |
| Zone E | E-02-04 | 5,253 | 10,506 | 287.0 | 37 | 150 | 70 |
| Zone E | E-02-05 | 5,583 | 11,165 | 287.0 | 39 | 150 | 74 |
| Zone E | E-02-06 | 5,105 | 10,210 | 287.0 | 36 | 150 | 68 |
| Zone E | E-02-07 | 5,062 | 10,125 | 287.0 | 35 | 150 | 67 |
| Zone E | E-02-08 | 5,062 | 10,125 | 287.0 | 35 | 150 | 67 |
| Zone E | E-02-09 | 5,411 | 10,822 | 287.0 | 38 | 150 | 72 |
| Zone E | E-02-11 | 5,317 | 10,634 | 287.0 | 37 | 150 | 71 |
| Zone E | E-02-12 | 4,725 | 9,450 | 287.0 | 33 | 150 | 63 |
| Zone E | E-02-13 | 4,725 | 9,450 | 287.0 | 33 | 150 | 63 |
| Zone E | E-02-14 | 5,050 | 10,101 | 287.0 | 35 | 150 | 67 |
| Zone E | E-02-15 | 6,979 | 13,958 | 287.0 | 49 | 150 | 93 |
| Zone E | E-02-16 | 5,590 | 11,181 | 287.0 | 39 | 150 | 75 |
| Zone E | E-02-17 | 5,590 | 11,181 | 287.0 | 39 | 150 | 75 |
| Zone E | E-02-18 | 3,522 | 7,044 | 287.0 | 25 | 150 | 47 |
| Zone E | E-02-19 | 2,340 | 4,681 | 287.0 | 16 | 150 | 31 |
| Zone F | F-01-01 | 6,819 | 13,638 | 287.0 | 48 | 150 | 91 |
| Zone F | F-01-02 | 6,581 | 13,162 | 287.0 | 46 | 150 | 88 |
| Zone F | F-01-03 | 4,556 | 9,113 | 287.0 | 32 | 150 | 61 |
| Zone F | F-01-04 | 4,187 | 8,374 | 287.0 | 29 | 150 | 56 |
| Zone F | F-01-05 | 6,341 | 12,683 | 287.0 | 44 | 150 | 85 |
| Zone F | F-01-06 | 7,254 | 14,508 | 287.0 | 51 | 150 | 97 |
| Zone F | F-01-07 | 5,628 | 11,255 | 287.0 | 39 | 150 | 75 |
| Zone F | F-01-08 | 5,541 | 11,081 | 287.0 | 39 | 150 | 74 |
| Zone F | F-02-01 | 6,468 | 12,936 | 287.0 | 45 | 150 | 86 |
| Zone F | F-02-02 | 7,020 | 14,040 | 287.0 | 49 | 150 | 94 |
| Zone F | F-02-03 | 7,020 | 14,040 | 287.0 | 49 | 150 | 94 |
| Zone F | F-02-04 | 6,240 | 12,480 | 287.0 | 43 | 150 | 83 |
| Zone F | F-02-05 | 5,972 | 11,943 | 287.0 | 42 | 150 | 80 |
| Zone F | F-02-06 | 8,710 | 17,420 | 287.0 | 61 | 166 | 105 |
| Zone F | F-02-07 | 5,314 | 10,629 | 287.0 | 37 | 150 | 71 |
| Zone F | F-02-08 | 5,144 | 10,287 | 287.0 | 36 | 150 | 69 |
| Zone F | F-02-09 | 5,282 | 10,564 | 287.0 | 37 | 150 | 70 |
| Zone F | F-03-01 | 25,109 | 50,217 | 287.0 | 175 | 295 | 170 |
| Zone F | F-03-02 | 27,172 | 54,344 | 287.0 | 189 | 304 | 179 |
| Zone F | F-03-03 | 19,132 | 38,264 | 287.0 | 133 | 261 | 147 |
| Zone F | F-03-04 | 20,943 | 41,886 | 287.0 | 146 | 272 | 154 |
| Zone F | F-03-05 | 26,862 | 53,723 | 287.0 | 187 | 303 | 177 |
| Zone F | F-03-06 | 18,952 | 37,904 | 287.0 | 132 | 260 | 146 |
| Zone F | F-04-01 | 23,723 | 47,446 | 287.0 | 165 | 288 | 165 |
| Zone F | F-04-02 | 28,892 | 57,784 | 287.0 | 201 | 311 | 186 |
| Zone F | F-04-03 | 23,500 | 46,999 | 287.0 | 164 | 287 | 164 |
| Zone F | F-04-04 | 23,642 | 47,285 | 287.0 | 165 | 287 | 165 |
| Zone F | F-04-05 | 28,892 | 57,784 | 287.0 | 201 | 311 | 186 |
| Zone F | F-04-06 | 23,623 | 47,247 | 287.0 | 165 | 287 | 165 |
| Zone G | G-02-03 | 4,598 | 9,197 | 287.0 | 32 | 150 | 61 |
| Zone G | G-02-04 | 4,763 | 9,526 | 287.0 | 33 | 150 | 64 |
| Zone G | G-02-05 | 4,763 | 9,526 | 287.0 | 33 | 150 | 64 |
| Zone G | G-02-06 | 4,303 | 8,605 | 287.0 | 30 | 150 | 57 |
| Zone G | G-02-07 | 3,850 | 7,699 | 287.0 | 27 | 150 | 51 |
| Zone G | G-02-08 | 3,988 | 7,975 | 287.0 | 28 | 150 | 53 |
| Zone G | G-02-09 | 3,988 | 7,975 | 287.0 | 28 | 150 | 53 |
| Zone G | G-02-10 | 3,602 | 7,204 | 287.0 | 25 | 150 | 48 |
| Zone G | G-02-11 | 4,900 | 9,799 | 287.0 | 34 | 150 | 65 |
| Zone G | G-02-12 | 5,075 | 10,150 | 287.0 | 35 | 150 | 68 |
| Zone G | G-02-13 | 5,075 | 10,150 | 287.0 | 35 | 150 | 68 |
| Zone G | G-02-14 | 4,585 | 9,169 | 287.0 | 32 | 150 | 61 |
| Zone G | G-02-15 | 5,852 | 11,704 | 287.0 | 41 | 150 | 78 |
| Zone G | G-02-16 | 4,968 | 9,937 | 287.0 | 35 | 150 | 66 |
| Zone G | G-02-17 | 6,063 | 12,126 | 287.0 | 42 | 150 | 81 |
| | | | PRE-P Passive Recreational Zone | | | | |
| Zone B | B-01-01 | 65,543 | 0 | - | 0 | | 70* |
| Zone B | B-01-05 | 44,334 | 0 | - | 0 | | 70* |
| Zone C | C-02-07 | 41,099 | 0 | - | 0 | | * |
| Zone C | C-02-08 | 58,040 | 0 | - | 0 | | * |
| Zone D | D-01-03 | 14,992 | 0 | - | 0 | | * |
| Zone D | D-01-04 | 137,809 | 0 | - | 0 | | * |
| | | | PRE/CUL-A Active Recreational Zone | | | | |
| Zone C | C-02-06 | 3,183 | 1,591 | 796.0 | 2 | 22 | 72 |
| Zone D | D-01-05 | 16,237 | 8,119 | 796.0 | 10 | 94 | 86 |
| | | | PRE/CUL-B Active Recreational Zone for SEA Games | | | | |
| Zone A | A-05-03 | 20,008 | 40,017 | 500.0 | 80 | 267 | 150 |
| Zone B | B-02-01 | 73,580 | 147,159 | 500.0 | 294 | 404 | 364 |
| Zone C | C-02-03 | 21,833 | 43,665 | 500.0 | 87 | 278 | 157 |
| Zone C | C-02-04 | 16,715 | 33,430 | 500.0 | 67 | 244 | 137 |

NOTE: Calculation of the required bicycle parking is based on the assumption that 100% of the GFA of each zone will comprise of its principle use. Based on the actual building uses proposed during implementation, the number of required bicycle parking may differ from what is proposed in Table 5.4.

## 5.8.4 PERSONAL MOBILITY DEVICE (PMD) MOVEMENT

### Personal Mobility Devices (PMD)

Personal Mobility Devices (PMDs) are small wheeled devices that provide personal mobility and substitute for automobile travel. Included are the Electrical Personal Assistive Mobility Devices (EPAMDs), a self-balancing two non-tandem wheeled device designed to transport only one person with an electric propulsion system. Other than bicycles, PMD Types are:

### Human-powered:

- Hand-powered wheelchairs
- Push scooters
- Unicycles

### Motorized

- Electric powered bikes
- Motorized wheelchairs
- Electric / Gasoline powered scooters
- 'Segway' scooters

*Source: : Victoria Transport Policy Institute*

Regulations and restrictions of PMD use to be verified with the DPWH.

Figure 5.49 PMD Lanes across BGC, Makati
*Source: : Electric Kick Scooter Philippines (EKSPH)*


Figure 5.50 PMD Lanes

09

# UTILITIES AND INFRASTRUCTURE

Good planning for utilities and infrastructure is crucial to support the sustainable urban development of NGAC. This is done by ensuring that infrastructures respond to future challenges while meeting the demands and needs of users in NGAC.

This chapter will address the infrastructure planning of NGAC. It will outline the key strategies for different aspects of utilities and infrastructure, including drainage, wastewater, water supply, power supply and solid waste to support the proposed master plan and developments in NGAC. The purpose is to implement an integrated infrastructure system that can ensure NGAC remains resilient in the face of climate change, disasters and future population demands.

# 9.1 DRAINAGE

## 9.1.1 OVERALL DRAINAGE PLAN

### Existing Condition

There are existing and partially completed primary arterial, minor arterial, and collector roads in the project site as identified in Figure 9.1.

Existing roadside drains would need to be investigated and As Built drawings studied to verify the adequacy of the proposed drainage for phases 1A to 3 to tap into.

There are several roads that have no drainage systems at the time of the site visit conducted September 30, 2020.

Providing sufficient drainage system will be part of the undertaking based on the future development. Integration of the existing with the new drainage system will be further evaluated or studied during the detailed design phase.

Existing river is located at the middle of the project. Outfalls of the drainage networks will be discharging to the existing river.

### Overall Drainage Plan

The drainage plan is based on the phasing of the project development as well as the phasing of the construction of the roads. There are several roads which will be constructed ahead of the project phasing plan. The drainage layout will follow the road phasing plan. The drainage networks have been designed to work independently with consideration to the phasing. Existing drainage systems of the Arterial Roads will be studied. However it is preferable to outfall to the river located in the middle of the project site.

River development will also need to be considered to increase the conveyance capacity. This may include modifying the river sections to be more efficient by widening, providing slope protection for erodible banks, desilting and dredging.

The removal of two (2) collector roads in Phase 3 plot will have minimal impact on the drainage network; a reduction for road side drains only. The increment of population (11%) will directly impact the drainage design considering land use, the runoff coefficient will vary from 0.7 to 1.0. Since the drainage networks will be designed independently according to phasing. Changes in drainage sizing will be localized and generally will not impact the overall drainage system.

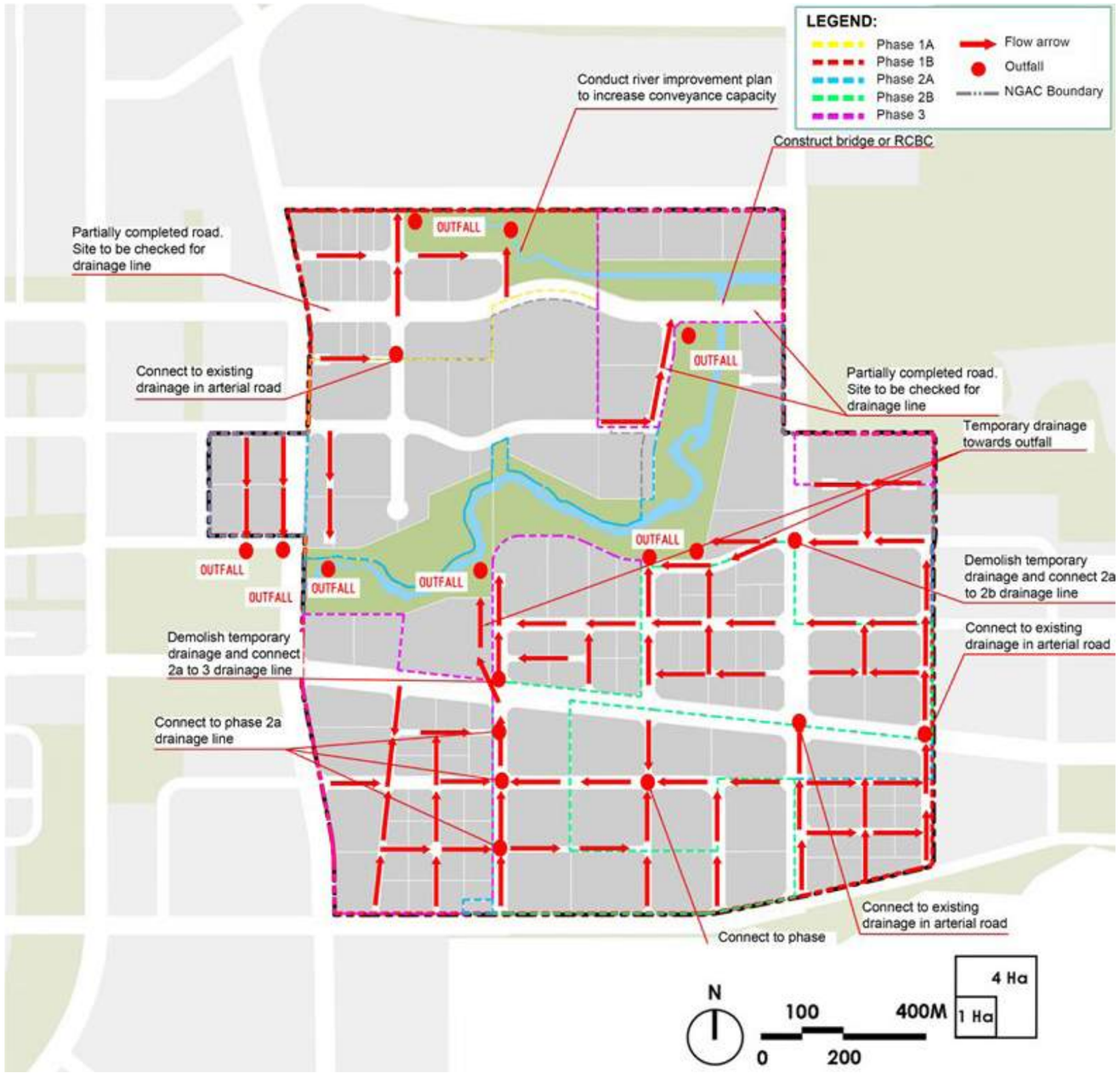



Figure 9.1 Overall Drainage Plan

## 9.1.2 VARIANCE FROM THE MASTER PLAN

The proposed drainage layout varies from the proposed master plan. The concerns that were considered were

1. The Phasing of the NGAC.
2. Project Boundary Extent of NGAC.

The Arterial Roads are already partially constructed. Some of the roads already have existing drainage lines.

There is uncertainty whether the size of the drainage along the AR's are sufficient to carry the drainage of the plots, or whether the inverts of the new drainage will be able to connect to AR's.

On the Southbound side, it shows that AR is outside the NGAC Project Boundary. This is not yet constructed. However, there are concerns on the construction schedule and the tie-in connections.

On the West side, there are locations where the drainage layout will have to connect with adjacent drainage network outside of NGAC's project boundary. This issue is dependent on the construction schedule of that drainage line and whether it is built large enough to account for upstream source of water run-off.

There may be flooding in the area where the connection should have been installed.

## 9.1.3 OUTFALL LOCATION NEAR STP

These are existing roads already. The existing drainage layout will need to be checked and evaluated for its appropriate outfall location.

Recommendations shall be provided if the outfall locations are inadequate and will cause localized flooding.

Figure 9.2 Typical Outfall. End of Culvert barrel flush with the headwall

*Source: Hydraulic Design of Highway Culverts, 2012, U.S. Federal Highway Administration*

# 9.2 WATER SUPPLY

## 9.2.1 OVERALL WATER SUPPLY PLAN

### Design Concept

The concept of the design is to provide 24/7 supply of potable water to all locators within NGAC. The facilities may include reservoirs, pumping equipment and appurtenances installed at strategic locations to ensure continuity of supply while maintaining the minimum pressure at the delivery points.

Preliminary Design will follow the parameters as indicated in the MPSS and for those not present in the MPSS will follow the parameters will follow the LWUA design standard which is being adopted by most of the water district in the country. The design concept of the system is taking into consideration the following:

1. Parallel pipelines (both sides of the road) are proposed to be installed along the road network.

2. Distribution networks shall be designed to withstand the maximum standard pressure and a minimum pressure within the service area.

3. Pipelines are to be installed below ground meeting the minimum standard cover above crown to final grade. The minimum cover along road crossings will be observed.

4. Maximum flow velocities should not exceed standard.

5. Regulating water storage shall be provided to suit operational requirement and flow by gravity to the distribution system.

6. Valving schemes shall be considered in the design for hydraulic or system isolation to enable area partial shutdown during maintenance.

7. Pressure reducing valves are to be applied in the system to avoid excessive pressure exceeding the allowable maximum pressure within the system.

The removal of two (2) collector roads in Phase 2A plot will entail that the utility provider (Primewater) will have to provide the water services from the distribution pipelines nearest to the property

*Reference:*
*Overall NCC Infrastructure Plan (as of June 2020)*

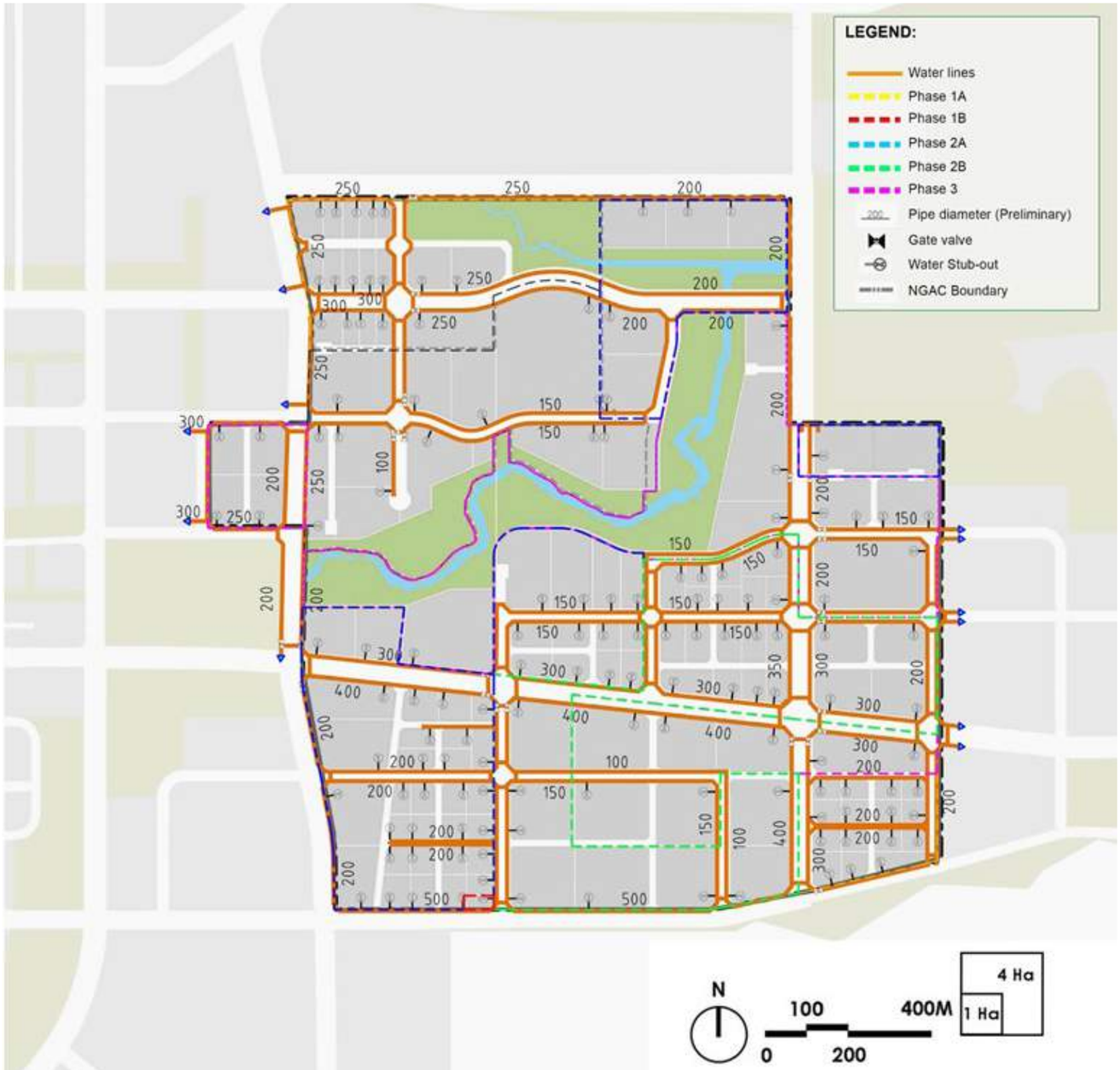



Figure 9.3 Overall Water Supply Plan
*Based on the Overall NCC Infrastructure Plan (as of June 2020))*

## 9.2.2 WATER DEMAND

Table 9.1 Water Demand Estimates Comparison

| SJ Land Use | | | | | | | |
|---|---|---|---|---|---|---|---|
| Land Use | | Area (sqm) | Area (ha) | FAR | GFA (sqm) | Demand/ Area | Water Demand (m3/day) |
| | R2 Medium Density Residential Zone | 0.00 | 0.00 | 1.5 | 0.00 | | |
| | R3 High Density Residential Zone | 122,227.92 | 12.22 | 3.0 | 366,683.76 | 372 | 4547 |
| | R-MU Mixed Use Residential Zone | 231,423.77 | 23.14 | 4.0 | 925,695.09 | 411 | 9507 |
| | C1 Neighborhood Level Commercial Zone | 0.00 | 0.00 | 2.0 | 0.00 | 181 | 0 |
| | C2 City Level Commercial Zone | 155,420.69 | 15.54 | 3.0 | 466,262.06 | 164 | 2547 |
| | C3 Central Business Zone | 14,565.58 | 1.46 | 4.0 | 58,262.32 | 311 | 453 |
| | GI-G General Institutional Civic Zone | 841,415.10 | 84.14 | 2.0 | 1,682,830.20 | 57 | 4771 |
| | GI-E General Institutional Education Zone | 129,877.97 | 12.99 | 1.0 | 129,877.97 | 35 | 450 |
| | PRE-P Passive Recreational Zone | 361,817.61 | 36.18 | - | - | - | - |
| | PRE/CUL-A Active Recreational Zone | 19,419.77 | 1.94 | 0.5 | 9,709.89 | 5 | 11 |
| | PRE/CUL-B Active Recreational Zone for SEA Games | 132,136.02 | 13.21 | 2.0 | 264,272.04 | 100 | 1321 |
| | Road (ROW) | 426,237.66 | 42.62 | - | - | | |
| Total | | 2,434,542.09 | 243.45 | | 3,903,593.32 | | 23,607.02 |
| | | | | | | | |
| NK Land Use | | | | | | | |
| Land Use | | Area (sqm) | Area (ha) | FAR | GFA (sqm) | Demand/ Area | Water Demand (m3/day) |
| | R2 Medium Density Residential Zone | 85,254.69 | 8.53 | 1.5 | 127,882.04 | 124 | 1053 |
| | R3 High Density Residential Zone | 117,657.51 | 11.77 | 3.0 | 352,972.53 | 372 | 4377 |
| | R-MU Mixed Use Residential Zone | 260,038.03 | 26.00 | 4.0 | 1,040,152.12 | 411 | 10682 |
| | C1 Neighborhood Level Commercial Zone | 52,228.55 | 5.22 | 2.0 | 104,457.10 | 181 | 945 |
| | C2 City Level Commercial Zone | 146,377.75 | 14.64 | 3.0 | 439,133.25 | 164 | 2399 |
| | C3 Central Business Zone | | | 4.0 | | | |
| | GI-G General Institutional Civic Zone | 677,118.92 | 67.71 | 2.0 | 1,354,237.84 | 57 | 3839 |
| | GI-E General Institutional Education Zone | 159,295.39 | 15.93 | 1.0 | 159,295.39 | 35 | 552 |
| | PRE-1 Passive Recreational Zone | 377,250.34 | 37.73 | - | - | - | - |
| | PRE/CUL-A Active Recreational Zone | 3,182.55 | 0.32 | 0.2 | 636.51 | 5 | 2 |
| | PRE/CUL-B Active Recreational Zone for SEA Games | 115,533.29 | 11.55 | 2.0 | 231,066.58 | 100 | 1155 |
| | Road (ROW) | 440,605.07 | 44.06 | - | - | | |
| Total | | 2,434,542.09 | 243.45 | | 3,681,951.32 | | 25,005.35 |

*Source: SJ, Overall NCC infrastructure plan (as of June 2020)*

### Comparison of Estimated Demand with Overall NCC Infrastructure Plan (as of June 2020)

Water demand projection from the Overall NCC Infrastructure Plan increased by 10% due to the change in land use/zoning classification within the 243 ha development. The per capita consumptions used in the Overall NCC Infrastructure Plan were adopted in the calculations of the new water demand projections.

The increase is due to changes in zoning/ classification within the total area.

System hydraulics shall be based on the finalized zoning plan and source confirmation for the supply of 27.391 MLD.

All other assumptions in terms of water quality, supply pressure and availability in the Overall NCC Infrastructure Plan are retained.

### Effect of Possible Increase in Population

The proposed changes in land use that may result in an estimated 11% increase in population was reviewed in terms of water demand.

It was found that the increase in water demand by 2,366 m3/day (0.7%) to the total water demand for the whole of NCC (341,515 m3/day) due to land use change is insignificant and can be easily handled by Primewater.

# 9.3 SEWERAGE AND WASTEWATER TREATMENT

## 9.3.1 OVERALL SEWERAGE PLAN

### Effluent Standards

The wastewater treatment plants shall employ a process to ensure that the effluent quality shall meet the standards set by the Department of Environment and Natural Resources particularly DENR DAO 2016-08 Effluent Standards. All technical specifications for the network and appurtenances specified in the original master plan shall be adopted.

### Wastewater Demand

The water demand study will be used to determine the wastewater generated at the NGAC, and the Wastewater Treatment Plant will be sized accordingly in modular fashion as it follows the phase of development. The existing STP and sewerage network shall be integrated in the entire plan for wastewater services for the whole of NGAC.

The increase in population due to the changes in the land use and zoning plan naturally increased the water demand and wastewater generated by the entire development. Review of the pipe sizes of sewer network and treatment plant capacity shall be done to consider the said increase.

Figure 9.4 Aerial View of Existing STP

*Source: NGAC Construction Supervision Team*

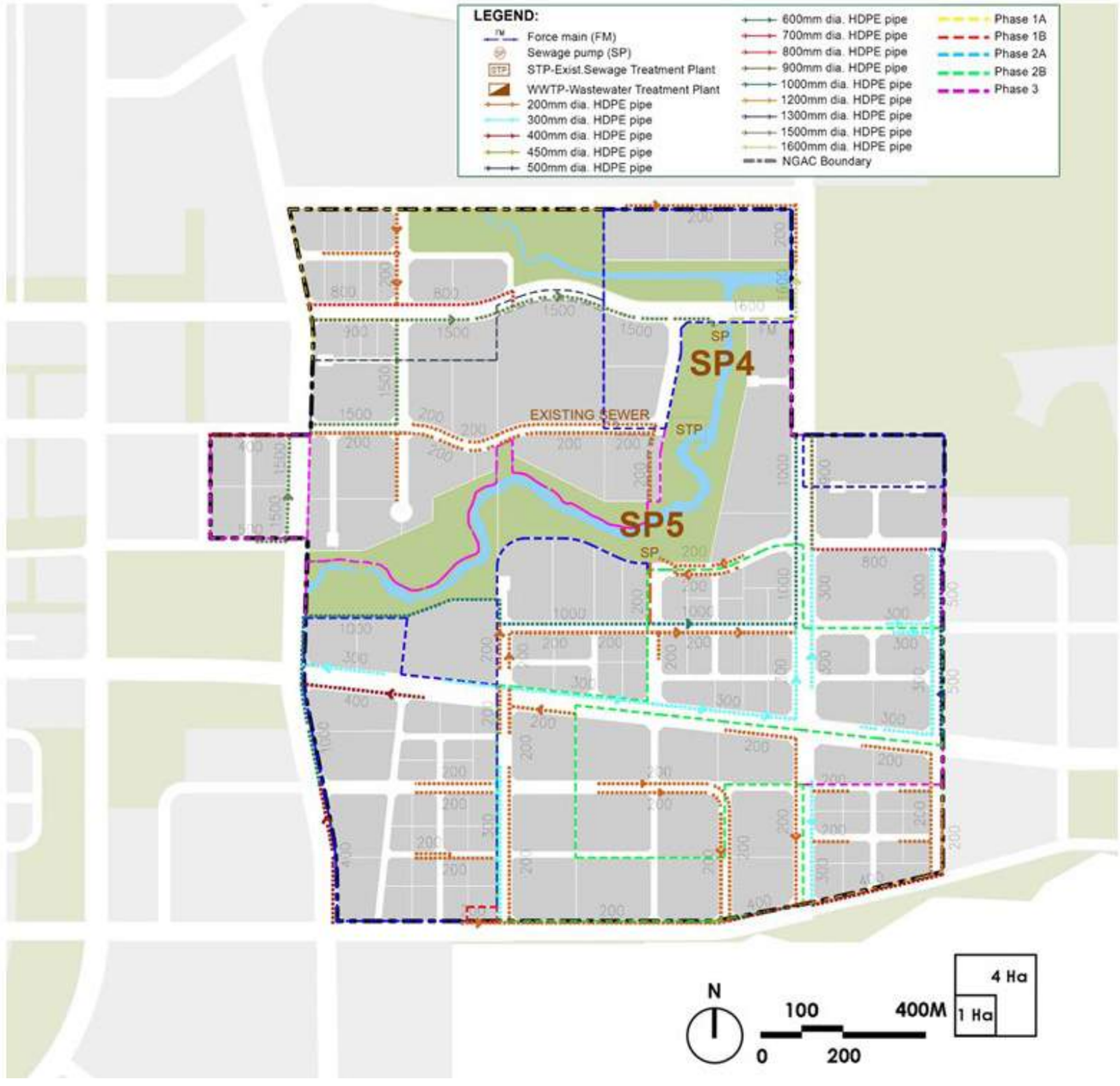



Figure 9.5 Overall Sewerage Plan

*Based on the Overall NCC Infrastructure Plan (as of June 2020))*

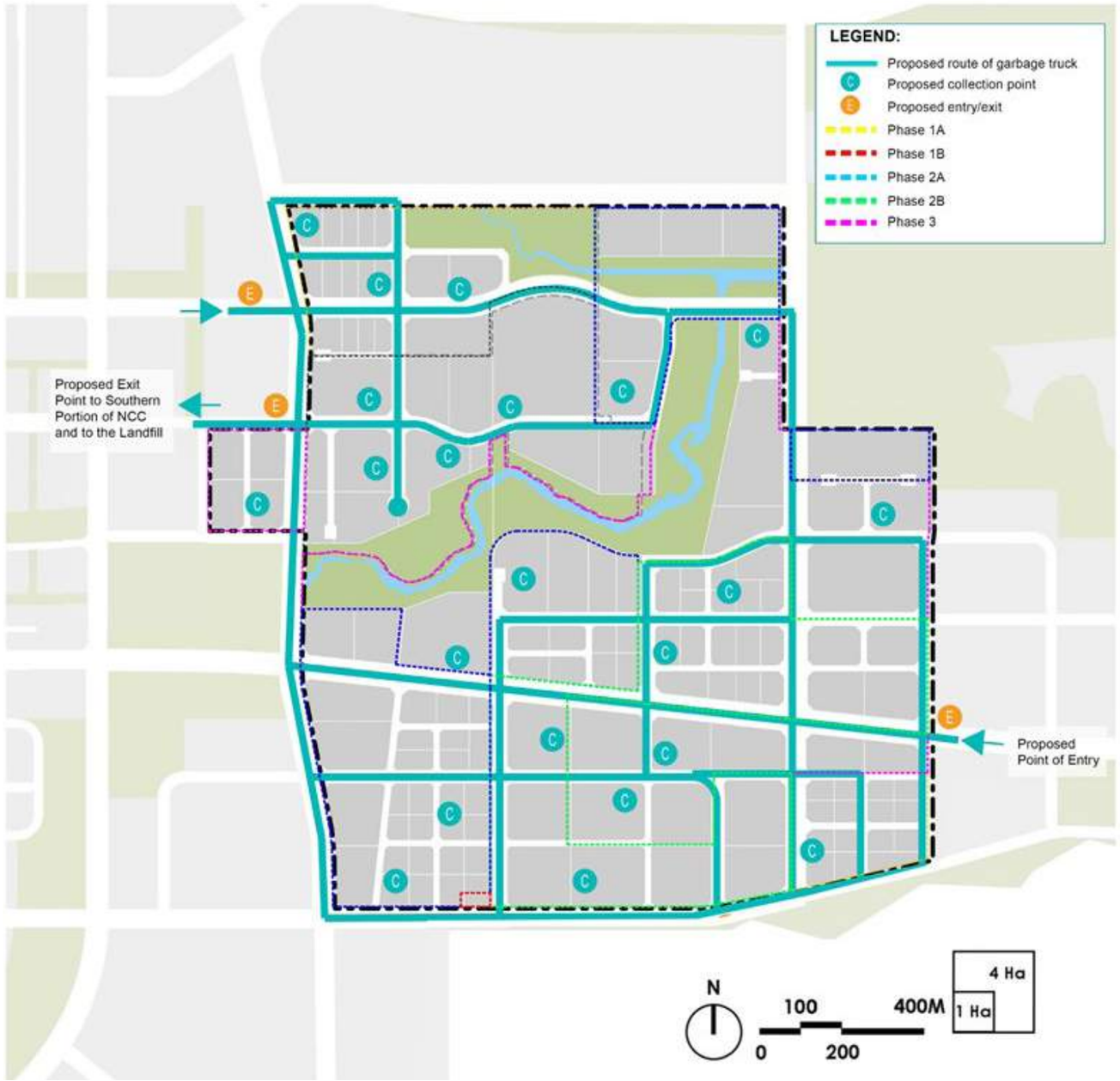



Figure 9.6 Overall Garbage Route and Collection Points

# 9.4 SOLID WASTE

## 9.4.1 OVERALL SOLID WASTE PLAN

### Garbage Truck Route

The garbage truck route will avoid the use of main roads and along river when possible.

It is proposed to enter through AR2 from the East, and then exit to the West to the NCC area.

Garbage truck will then traverse the southern portion of NCC to reach the Metro Clark Landfill Site.


Figure 9.7 Location of the Landfill Site

*Source: Overall NCC Infrastructure Plan (as of June 2020)*

## 9.4.2 SOLID WASTE MANAGEMENT

### Solid Waste Management at NGAC

Large volume of solid wastes are generated each day in any development such as the NGAC. Solid wastes are generally categorized into non-biodegradable, biodegradable and hazardous. Effective solid waste management system will be developed to ensure that solid wastes particularly hazardous wastes are handled, treated or disposed of in accordance with the government regulations.

The solid waste management at the NGAC shall comply with the requirements of RA 9003- Ecological Solid Waste Management Act which governs the management of solid waste in the country and being implemented by the Solid Waste Management Division of the Environmental Management Bureau of DENR One of the pertinent instruction in RA9003 is that segregation should be at source under the general types of waste such as:

- Biodegradable
- Recyclable
- Residual
- Special Waste

### On-Site Waste Segregation

Locators shall be required to provide separate color-coded bins to contain solid wastes prior to pick-up for delivery to Materials Recovery Facility (MRF) and/or to the end of pipeline in proper coordination with the concerned LGU. Waste reduction and recovery program will be institutionalized to reduce the volume of solid wastes that will reach the end of pipeline.

Toxic wastes, if any, shall be handled, treated and disposed of properly in accordance with the provisions of RA 6969 – Toxic Substance and Hazardous and Nuclear Waste Control Act of 1990


Figure 9.8 R.A.9003 Ecological Solid Waste Management Act of 2000


Figure 9.9 Existing Garbage Bins along the Riverpark


Figure 9.10 R.A.6969 Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

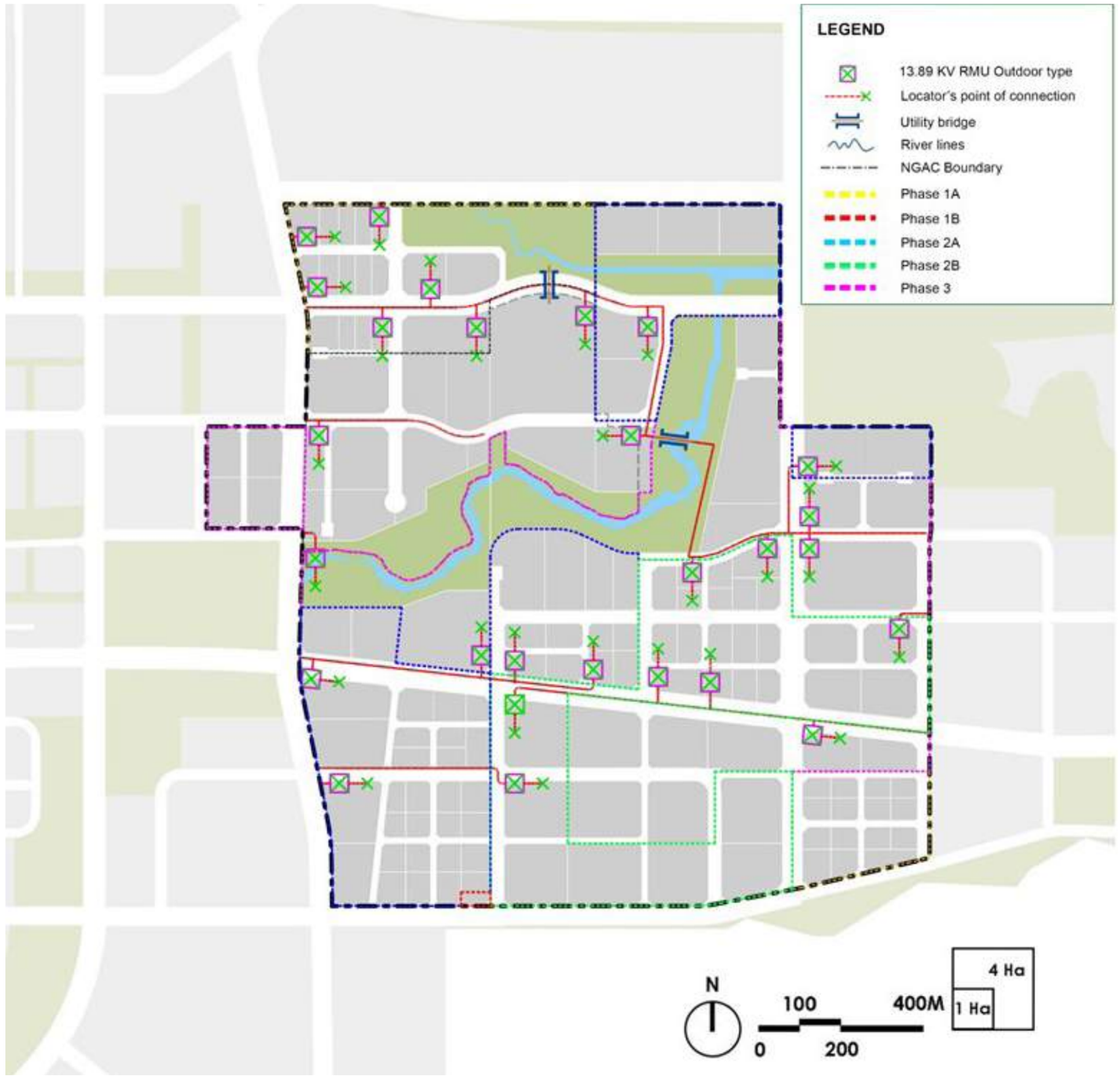



Figure 9.11 Overall Power Supply Plan

*Based on the Overall NCC Infrastructure Plan (as of June 2020))*

# 9.5 POWER SUPPLY

## 9.5.1 OVERALL POWER SUPPLY PLAN

### Underground Distribution System

The layout of the power supply will still adopt the suggested layout from Overall NCC Infrastructure Plan. Consistent with the Minimum Performance Standards and Specification (MPSS) set out for the distribution utility in its Joint Venture Agreement (JVA) with BCDA, the distribution lines will be a 13.8kV, 3-phase underground in PVC concrete-encased conduits with corresponding Ring Main Units (RMU) switchgears.

The underground distribution lines are configured in an open-loop system using 500 MCM Cu cable for the main lines and 3/0 AWG Cu cable for the subsidiary lines. RMUs with smart automation capability will be used to provide flexibility for the underground distribution lines.

The 13.8kV underground distribution circuits will be equipped with line sensors for smart outage detection, remote-controlled line switches, and faulted circuit indicators all of which can be remotely operated to automatically locate, isolate line troubles and swiftly restore services by automatically transferring them to unaffected sections of the electric distribution system.

The development of the power utilities will follow the Phasing Plan for NGAC development and consistent with the service standards requirement for the distribution utility.

It should be noted that the annual Distribution Development Plan (DDP) or Implementation Plan of the distribution utility for the NCC will be subject to the review process as set out in the JVA.

*Reference:*
*Overall NCC Infrastructure Plan (as of June 2020)*

## 9.5.2 POWER DEMAND

### Demand Estimates

Based on the updated land use plan and unit demand assumptions from the Overall NCC Infrastructure Plan, project demand in the area is slightly increased from 549.78 MW to 50.62 MW level.

This demand requirement can be supplied by the present substation of Meralco located outside the NGAC zone. The existing substation has a current capacity of 33MVA which more than caters for the current demand in area. Additional transformer capacity within the substation can be easily installed as soon as it is required consistent with the service standards for the distribution utility as stipulated in its Joint Venture Agreement (JVA) with BCDA.

The Overall NCC Infrastructure Plan for the whole of New Clark City requires for the overall development of six (6) substations strategically put up in the area in stages. Each substation will have a capacity of 3x33MVA which can be further upgraded for additional capacity, if required.

When the additional substation in the NCC becomes available, that will address the security requirement for at least "n-1" contingency for NGAC.

*Reference:*
*Overall NCC Infrastructure Plan (as of June 2020)*

Table 9.2 Power Demand Estimates Comparison

| Demand Estimates Based on Updated Land Use as of 6 Jan 2021 | | | | | |
|---|---|---|---|---|---|
| Land Use | Area (sqm) | Area (ha) | Percentage | W/m2 | Demand, kW |
| R2 Medium Density Residential Zone | 0.00 | 0.00 | 0.00% | 7.20 | 0.00 |
| R3 High Density Residential Zone | 122,227.92 | 12.22 | 5.02% | 7.20 | 880.04 |
| R-MU Mixed Use Residential Zone | 231,423.77 | 23.14 | 9.51% | 19.90 | 4,605.33 |
| C1 Neighborhood Level Commercial Zone | 0.00 | 0.00 | 0.00% | 92.00 | 0.00 |
| C2 City Level Commercial Zone | 155,420.69 | 15.54 | 6.38% | 92.00 | 14,298.70 |
| C3 Central Business Zone | 14,565.58 | 1.46 | 0.60% | 92.00 | 1,340.03 |
| GI-G Government and Institutional Zone | 841,415.10 | 84.14 | 34.56% | 19.30 | 16,239.31 |
| GI-E Education Zone | 129,877.97 | 12.99 | 5.33% | 19.30 | 2,506.64 |
| PRE-P Passive Recreational Zone | 361,817.61 | 36.18 | 14.86% | 19.30 | 6,983.08 |
| PRE/CUL-A Active Recreational Zone | 19,419.77 | 1.94 | 0.80% | 19.30 | 374.80 |
| PRE/CUL-B Active Recreational Zone for SEA Games | 132,136.02 | 13.21 | 5.43% | 19.30 | 2,550.23 |
| Road (ROW) | 426,237.66 | 42.62 | 17.51% | 0.00 | 0.00 |
| Total | 2,434,542.09 | 243.45 | 100.00% | | 49,778.17 |
| | | | | | |
| **NK Land Use** | | | | | |
| Land Use | Area (sqm) | Area (ha) | Percentage | W/m2 | kW |
| R2 Medium Density Residential Zone | 85,254.69 | 8.53 | 3.50% | 7.20 | 613.83 |
| R3 High Density Residential Zone | 117,657.51 | 11.77 | 4.83% | 7.20 | 847.13 |
| R-MU Mixed Use Residential Zone | 260,038.03 | 26.00 | 10.68% | 19.90 | 5,174.76 |
| C1 Neighborhood Level Commercial Zone | 52,228.55 | 5.22 | 2.15% | 92.00 | 4,805.03 |
| C2 City Level Commercial Zone | 146,377.75 | 14.64 | 6.01% | 92.00 | 13,466.75 |
| GI-G Government and Institutional Zone | 677,118.92 | 67.71 | 27.81% | 19.30 | 13,068.40 |
| GI-E Education Zone | 159,295.39 | 15.93 | 6.54% | 19.30 | 3,074.40 |
| PRE-1 Passive Recreational Zone | 377,250.34 | 37.73 | 15.50% | 19.30 | 7,280.93 |
| PRE-2A Active Recreational Zone | 3,182.55 | 0.32 | 0.13% | 19.30 | 61.42 |
| PRE-2B Active Recreational Zone (SEA Game) | 115,533.29 | 11.55 | 4.75% | 19.30 | 2,229.79 |
| Road (ROW) | 440,605.07 | 44.06 | 18.10% | 0.00 | 0.00 |
| Total | 2,434,542.09 | 243.45 | 100.00% | | 50,622.45 |

*Source: SJ, Overall NCC infrastructure plan (as of June 2020)*

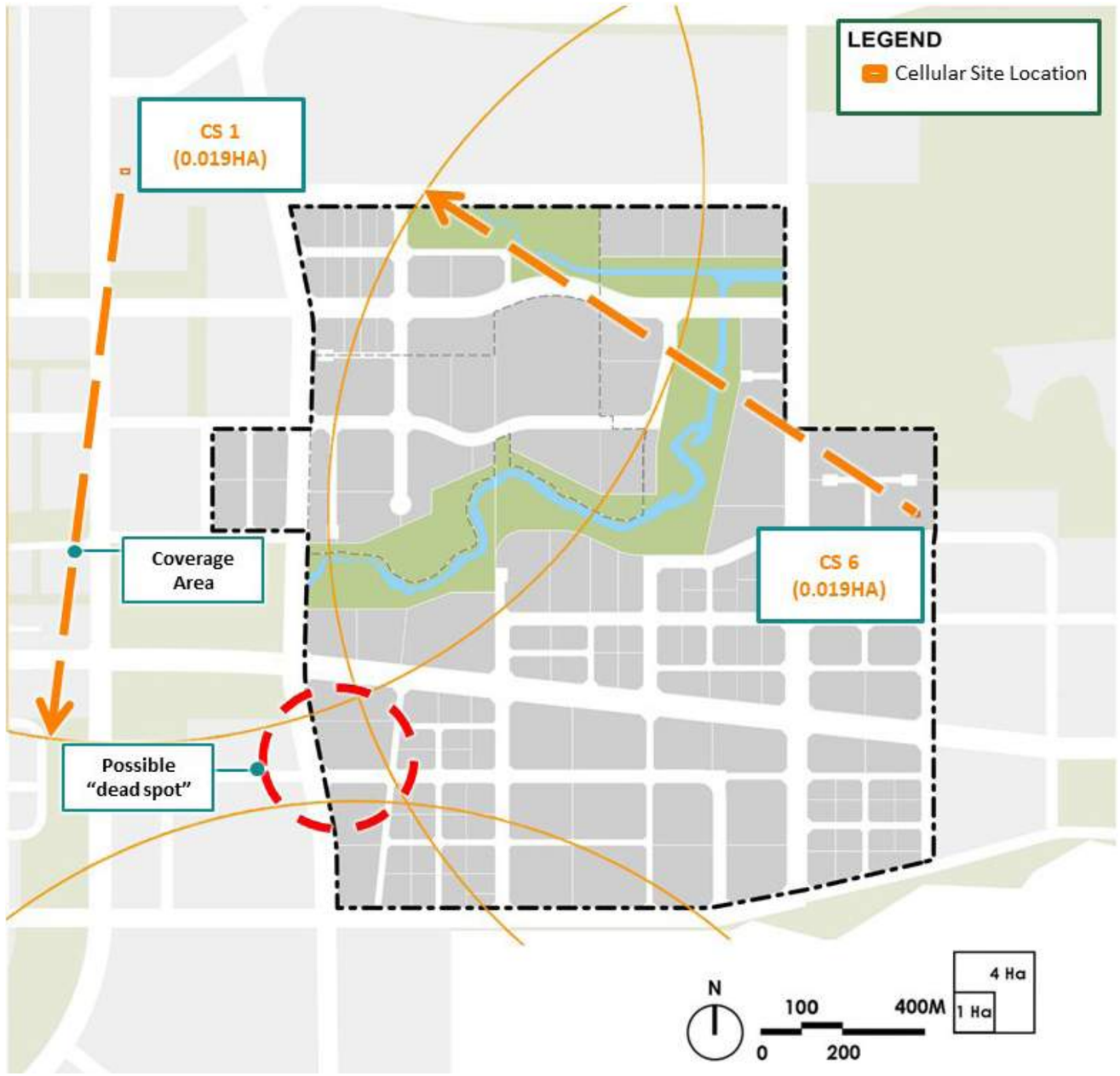



Figure 9.12 Cellular Site locations and Coverage Based on NK Volume II, June 2020

*Source: SJ, Overall NCC infrastructure plan (as of June 2020)*

# 9.6 INFORMATION AND COMMUNICATIONS TECHNOLOGY

## 9.6.1 IT TECHNOLOGY INFRASTRUCTURE

### Mobile (Cellular) Technology Infrastructure

The original cellular design from the Overall NCC Infrastructure Plan is applicable for 3G and 4G.

The proposed/indicative cellular site locations was reflected in the revised master plan (Figure 9.12). It was found that a small area in the NGAC site is not covered by the cellular coverage. This may become a possible "dead spot" and may require a cell signal booster within the development in the future.

It is proposed to eventually have the 5G broadband technology in order to be compatible with Clark.

The Telecom Company will provide the necessary and detailed solution to ensure very good telecommunication signal and minimize dead spots in the area. Solutions like installing distribution antenna systems (DAS) to work with repeater system or wireless amplifier of the Telecom Company.

The telecommunication services in the area will be required to be compliant with the latest 5G technology or equivalent latest or state-of-the-art ICT infrastructure.

The MPSS for the Distribution Utility already requires it to have some smart grid elements consistent with the smart city vision of the NCC. Specifically, the electric distribution system will have some Home Area Network (HAN) capabilities to cater for the Internet of Things (IOT) functionalities in the future. The IOT functionalities will be considered in the overall and detailed planning of the electricity and ICT provider in the NGAC.

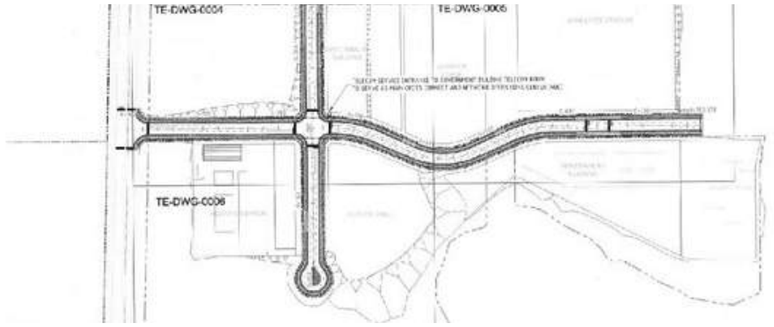



Figure 9.13 Phase 1A As-Built Underground Telecom Lines Layout

*Source: NGAC Construction Supervision Team*

## 9.6.2 UNDERGROUND FIBER OPTIC INFRASTRUCTURE

Phase 1A has an existing underground fiber optic cabling system. Based on the design, this system will cover the telecom requirements for the following:

- Voice and data
- CCTV
- CATV
- Interconnection for ICT services

The current design aims flexibility to scale up the bandwidth based on future requirements. There is also consideration on redundant pathways and free wi-fi for the whole area.

*Reference:*
*NGAC Phase 1A Underground Fiber Optic Infrastructure Design Report (August 2018)*

All electronics and telecommunications design shall comply with all the national codes and standards including but not limited to the following:

- Philippine Electronics Code Book 1 Telecommunications Facilities Distribution System
- Philippine Electronics Code Under Fire Detection and Alarm System
- ANSI/TIA-568-C-1 Commercial Building Telecommunications Cabling Standard
- ANSI/TIA-568-C-3 Optical Fiber Cabling Component Standards
- ANSI/TIA-607-CGenericTelecommunications Bonding and Grounding (Earthing) for Customer Premises
- EIA/TIA recommendation
- Existing laws and ordinances of the local enforcing authorities.

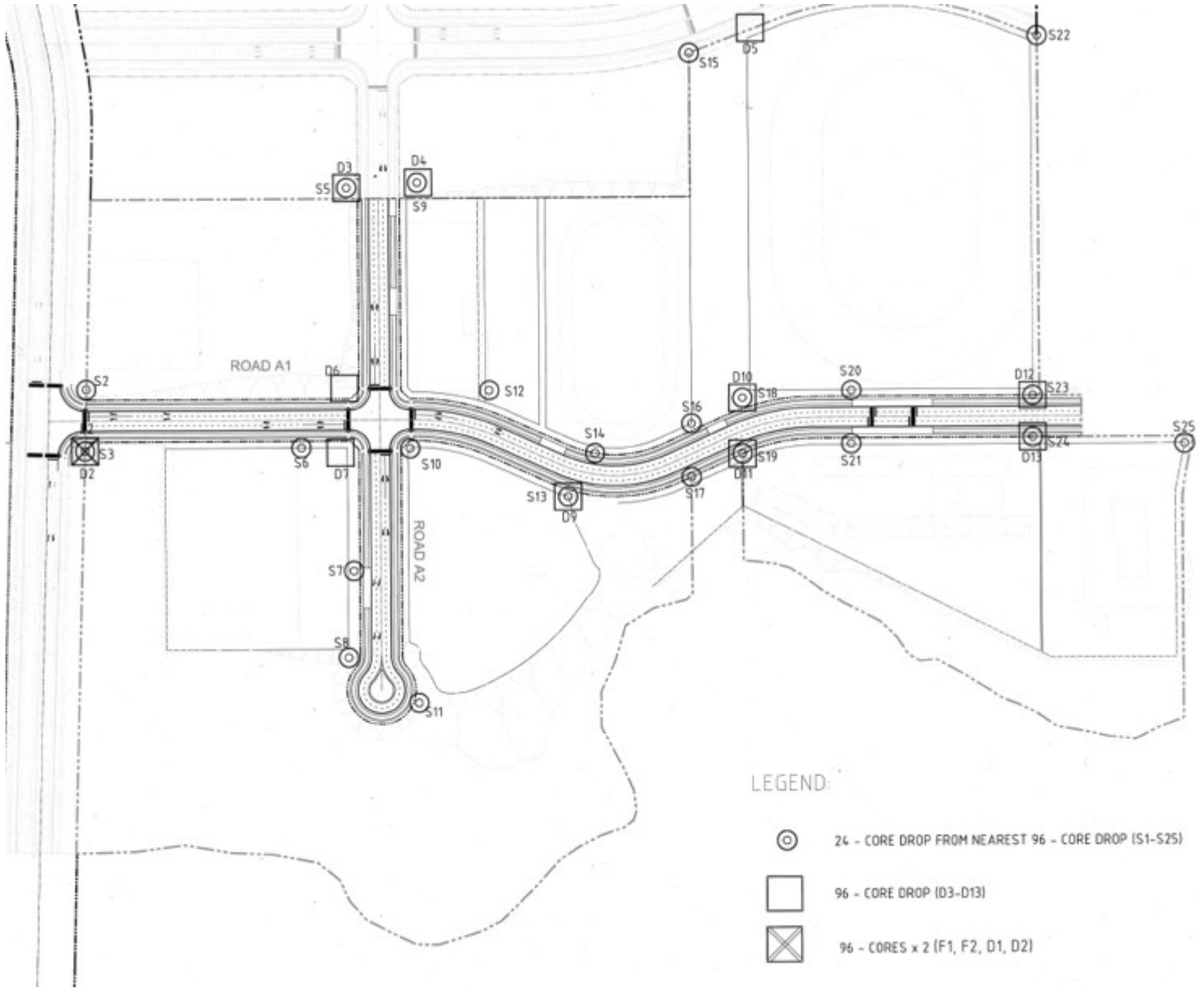



Figure 9.14 Phase 1A As-Built Underground Electronic Layout
*Source: NGAC Construction Supervision Team*

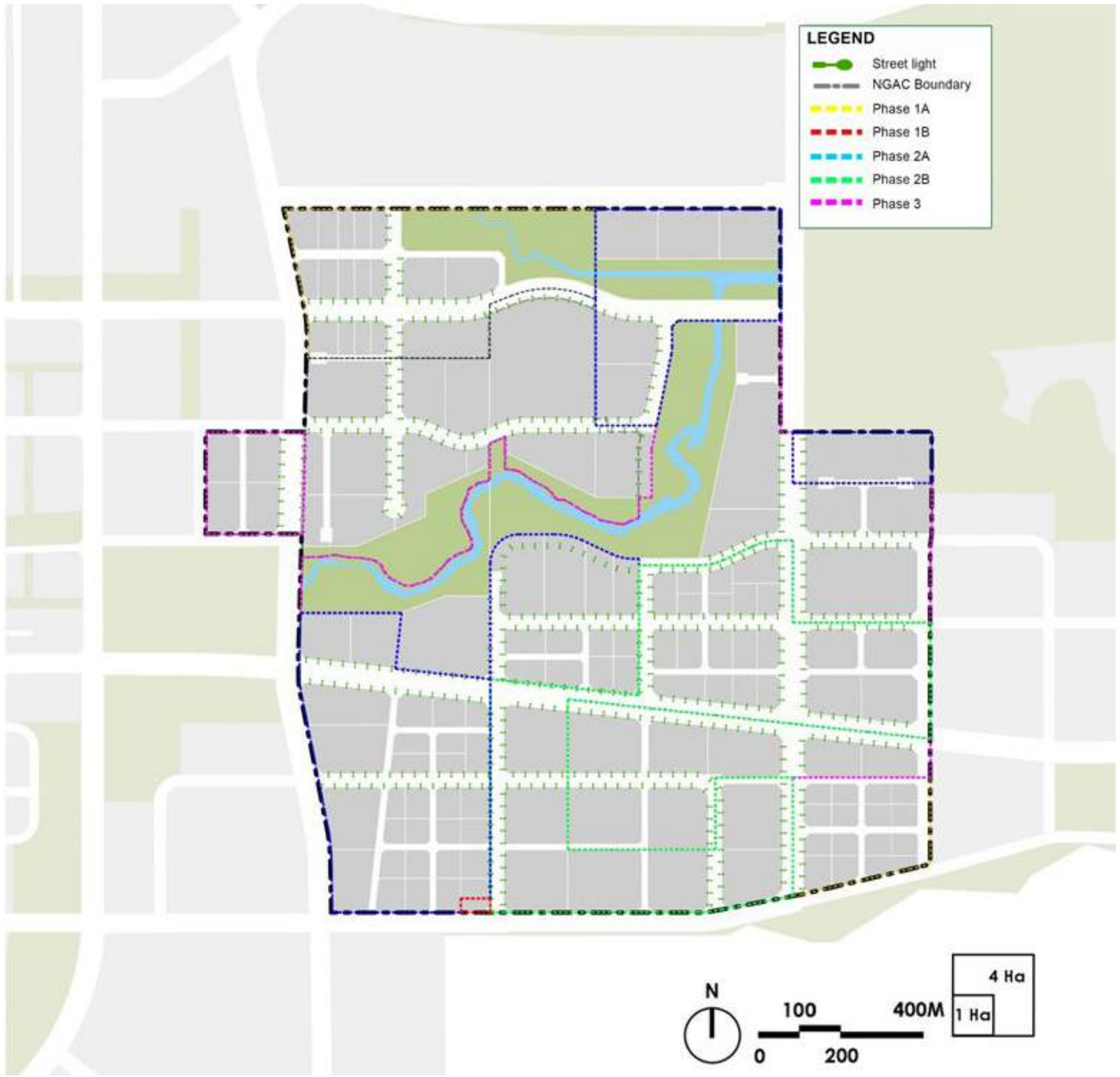



Figure 9.16 Overall Lighting Plan

# 9.7 LIGHTING

## 9.7.1 OVERALL LIGHTING PLAN

### Solar Street Lights

NGAC is currently using Solar-powered LED street lights for Phase 1A. 100% of its energy is solar-powered.

Road lighting installation shall be effectively earthed to the ground using coper conductors.

Earth fault loop impedance test for each road light and LCPs shall be submitted to the NGAC Lighting Division

*Reference:*
*NGAC Phase 1A Street Lighting System Design Report (January 2019)*


Figure 9.15 Actual Street lights in Phase 1A

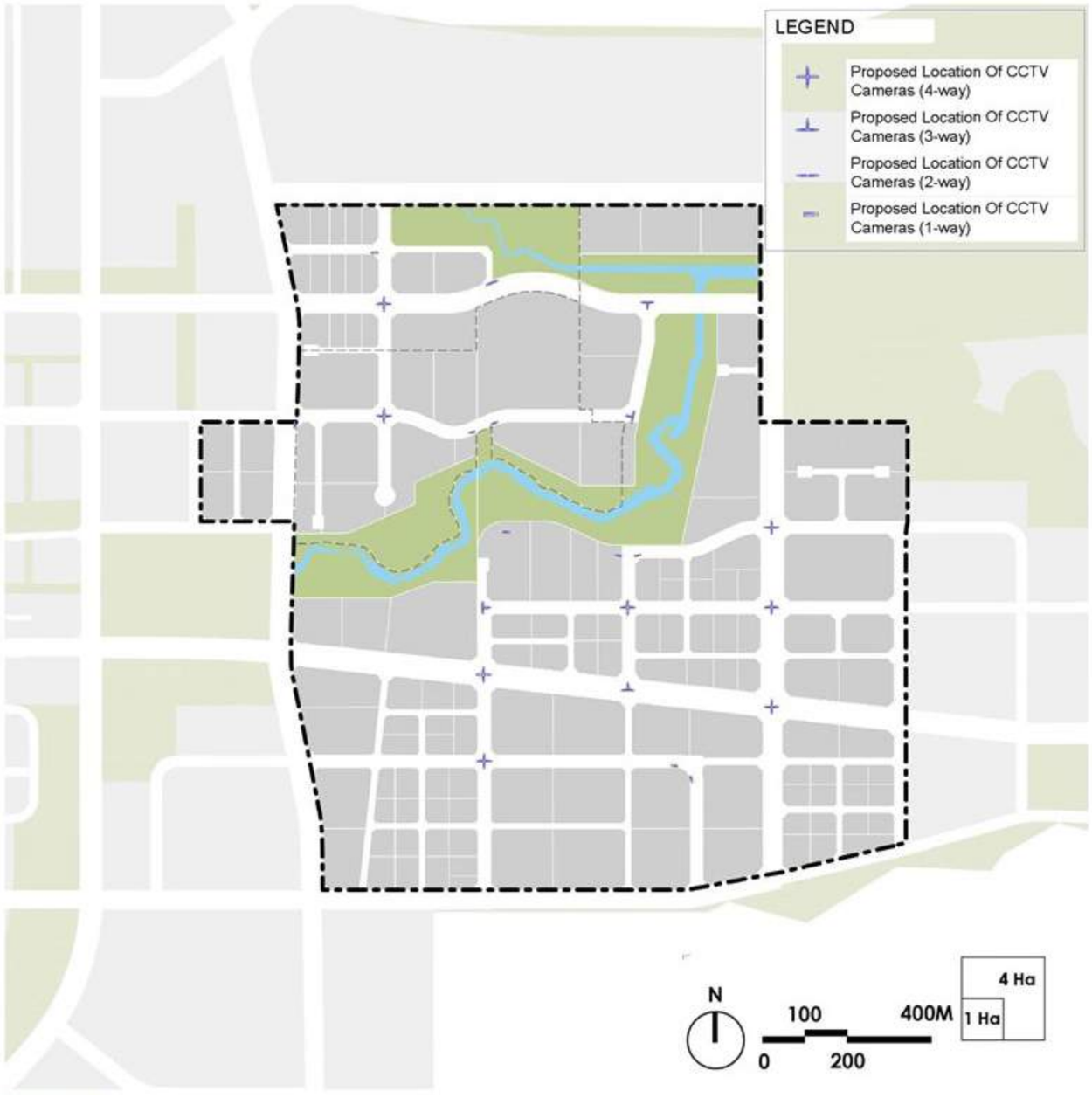



Figure 9.17 Overall Security Plan

# 9.8 SECURITY

## 9.8.1 OVERALL SECURITY PLAN

### Overall Security and Monitoring

The current ICT fiber optic-based system can be integrated to a city-wide CCTV surveillance system. This surveillance system is for security and traffic monitoring, with cameras (IP based) located at strategic areas.

It is proposed that a Central Command Center will monitor and keep the events captured in the CCTV cameras.

It is also proposed to use solar-powered CCTV cameras for smart security systems, normally installed at street intersections and at other strategic locations.

### Central Command Center and FDAS Monitoring

Central Command Center is meant to service NGAC only. After NCC gets close to being built-up, a central command can be relocated to service the entire city. Scope: CCTV systems, traffic control system, emergency response, coordination with utility company (i.e, Meralco, Primewater).

The current design concept for FDAS monitoring is that every building will have its own FDAS monitoring, which will be connected to the Central Command Center. This Central Command will be in charge of monitoring and fire response.

It is proposed that the Central Command Center will be near the Fire Station.

Figure 9.18 Solar Powered CCTV

*Source: https://www.pngfind.com/mpng/iixTomm_flood-early-warning-system-cctv-camera-with-solar/*

# 11

# INTEGRATED SUSTAINABILITY STRATEGIES

During the master plan development process, it is important to adopt strategies to ensure than urban development will be carried out sustainably. This includes balancing nature conservation and urban development, adopting appropriate responses to climate change and developing disaster resilience.

This chapter seeks to provide solutions to direct NGAC towards green and sustainable growth. This will include protecting and enhancing the natural assets of NGAC, and adopting an integrated approach to infrastructure management to ensure that NGAC may remain resilient in the face of climate change and disasters.

# 11.1 OVERVIEW

## 11.1.1 OVERALL SUSTAINABLE FRAMEWORK

### Alignment with NGAC Vision

The overall sustainable framework is linked to NGAC's Vision to have an "Active, Distinct, and Innovative Civic Hub and Cultural Heart." The three goals that stemmed from this vision became the take-off point to form the nine main themes for sustainable strategies.

The primary themes emphasized the need for a development that is efficient and follows best practice, but shall address the human element. While technology is a prime motivator and guide for locators, social and environmental strategies will offer a chance for the development to endure over time.


Figure 11.1 NGAC Vision Framework

### Sustainable Strategies: Main Themes

Under the goal Effective Governance, the following three themes are established:

- Parallel/ Complementary Systems
- Critical Infrastructure, and
- Technology Infrastructure for Smart City Ecosystem.

Under the goal A Green District, the following three themes are established:

- Sustainable Urban Mobility and Transport Modes,
- Eco-friendly Development Solutions, and
- Smart and Energy Efficient Structures.

Lastly, under the goal People-Centric District, the following three themes are established:

- Livability,
- Connectivity, and
- Walkability.

The respective key issues, direction, challenges and recommendations are detailed in the following pages.


Figure 11.2 Overall Sustainable Framework based on NGAC Vision and Goals

**Effective Governance**

| | Key Issues | Direction | Challenges | Recommendations |
|---|---|---|---|---|
|  Parallel/Complementary Systems (Contingency) | • Current development may have limited access to supply and distribution systems in order to deal with possible capacity shortages and even disasters | • Ensuring that investments consider redundancy / contingency for efficient processes | • Cost for investment | • Partnerships in terms of financing<br>• With fully instituted and operationalized checks & balances<br>• Ensure DU's compliance with N-1 contingency and Smart Grid requirement in the Joint Venture Agreement (JVA) |
|  Critical Infrastructure | • Current area has limited constructed infrastructure to ensure continuity of operations and connectivity even during a disaster | • Investment in and classification of the critical infrastructure within the area such as hospitals, transport network, security, and utilities | • Cost for investment<br>• Possible overcrowding of RROW for roads due to development and can no longer be used in emergency situations<br>• Security and maintenance | • Partnerships in terms of financing<br>• Adaptable to the highest number of future situations<br>• Insurance for recovery in case of disasters<br>• Dedicated emergency vehicular access points and/ or paths<br>• Central Command Center for overall security |
|  Technology Infrastructure for Smart City Ecosystem | • Current development may have limited technology infrastructure to build the smart city ecosystem | • Invest in information technology infrastructure base, and ensuring that the capacity can be expanded / increased in the future | • Cost for investment particularly considering that a technology's life cycle may be too short (i.e., obsolete)<br>• Different applications/ programs might not be compatible | • Development done by phase but ensure compatibility of systems<br>• Partnerships with service providers that have vertical integration in the supply chain to minimize risk of incompatibility |

Figure 11.3 Effective Governance Strategies Framework

## A Green District

| | Key Issues | Direction | Challenges | Recommendations |
|---|---|---|---|---|
|  Sustainable Urban Mobility and Transport Modes | • Reduction of CO2 emissions<br>• Discourage dependence on private vehicles | • Encouragement of Non-motorized Transport (NMT)<br>• Promotion and Development of efficient and safe mass transportation<br>• Investment in e-vehicles | • Preference for private vehicles due to convenience<br>• Current development has limited public transportation lines that can connect it to other areas<br>• High investment Cost requirement | • Strategic locations of transit stops to ensure that services and goods are accessible by NMT, e.g., walking, biking, etc.<br>• Partnerships with private transport organizations for dedicated public transport modes<br>• Partnerships in terms of financing |
|  Eco-Friendly Development Solutions | • Maintaining the ecological balance and nature as much as possible in the area<br>• Development of environmentally-friendly infrastructure that can cater to the public's needs | • Ensuring that the natural resources are used efficiently | • Increase in development and population can put pressure in the natural resources | • Creation of protected zones within the districts, i.e., "no-build" or "public amenities" zones<br>• Adoption of greywater recycling, rainwater harvesting, and zero waste<br>• Encourage permeable paving, e.g., in street-level parking |
|  Smart and Energy Efficient Structures | • Construction of energy-efficient buildings and structures<br>• Discourage dependence on traditional energy sources | • Encouragement of green building certification<br>• Use of building integrated energy efficient technologies<br>• Compliance with DOE Guidelines on Energy Conserving Design of Buildings<br>• Investment in renewable energy and energy-efficient technologies | • May discourage locators due to higher cost of making buildings compliant with green building certifications<br>• High investment cost requirement | • Delivered at optimal cost to consumers/ users<br>• Encourage Energy Service Company (ESCO) business models through incentive mechanism<br>• Partnerships in terms of financing and energy sources |

Figure 11.4 Green District Strategies Framework

A People Centric District

**Liveability**

| Key Issues | Direction | Challenges | Recommendations |
|---|---|---|---|
| • Emphasis on safety of the public, whether residents or transient<br>• Inclusiveness and quality of living environment for all range of income groups<br>• Ensure social equality and attention towards the elderly, children and women | • Investment in security and emergency response systems | • High cost of initial investments, particularly in the CCTV and Central Management/ Monitoring System | • Partnerships with companies that provide security and emergency response systems<br>• Objectives to be satisfied in full compliance with development controls (DCs) |


**Connectivity**

| | | | |
|---|---|---|---|
| • Access to different modes of transport, including alternative modes and non-motorized transport | • Provision of multiple options of transportation that are available throughout the area and during the day and night | • High cost of iniitial investment and potential of increasing the GHG emissions especially when the development is still in its early stages | • Objectives to be satisfied without sacrificing individual rights, security & privacy<br>• Partnerships with companies that provide and operate alternative modes of transport (e.g., with apps) and in e-vehicles<br>• Establishment of “compact” developments (5-10 minute walk to amenities and services) |


**Walkability**

| | | | |
|---|---|---|---|
| • Accessibility to goods and services, open spaces, and places of interest / culture even through walking | • Prioritize pedestrian-friendly streets and intuitive wayfinding of access points | • Increased demand for saleable land may result in reduction of pedestrian and cycling paths / lanes | • Prescribe road right of way (RROW) that includes space for shared lanes / bicycle and pedestrian lanes and roads, and traffic calming strategies<br>• Objectives to be satisfied for all users i.e. ambulatory, runnersing, PWD/ seniors/ children, bicycles, and others |

Figure 11.5 People Centric District Strategies Framework

# 11.2 SPECIFIC STRATEGIES

## 11.2.1 EFFECTIVE GOVERNANCE

### Sustainable Strategies under Respective Themes

Under Effective Governance, policies and programs, there are three themes focusing on:

- Parallel/ Complementary Systems (Contingency),
- Critical Infrastructure, and
- Technology Infrastructure for Smart City Ecosystem

For businesses and especially government offices to provide seamless services, it is important to foster connectivity, provide reliable power supply, and reinforce resilience.

For this to be possible, the infrastructure must be fully developed to ensure connectivity within and outside of NGAC. Furthermore, the IT infrastructure/ backbone must be established, as well as, the utilities such as power.

Safety and security must also be prioritized, it is important to have a central command center to monitor the area, especially with government areas requiring high level of security.

### Policies

Policies focusing on the following shall be proposed:

- Emergency funding allotment
- Full application set / kit of the NGAC development controls (DCs)
- Designation and protection of Emergency Vehicle Access corridors/ areas

### Programs

Programs focusing on the following shall be proposed:

- Investment in IT Infrastructure
- Asset management
- Alternative routes and / or modes
- Continuing training in the full appreciation with the correct application/ use and compliance monitoring agent on the NGAC development standards and guidelines (DSG)
- Development of Central Command Center with related systems and infrastructure


Emergency Funding Allotment

IT Infrastructure Investment

Asset Management

Alternative routes and/or modes

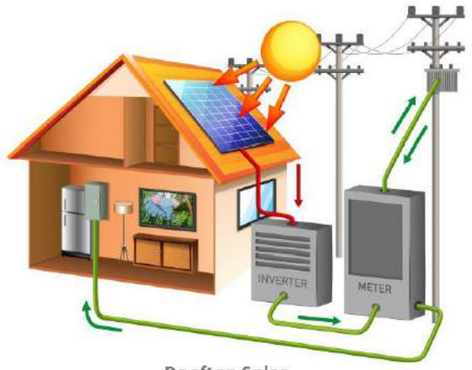
Emergency Vehicle Access Designation and Protection

Central Command Center

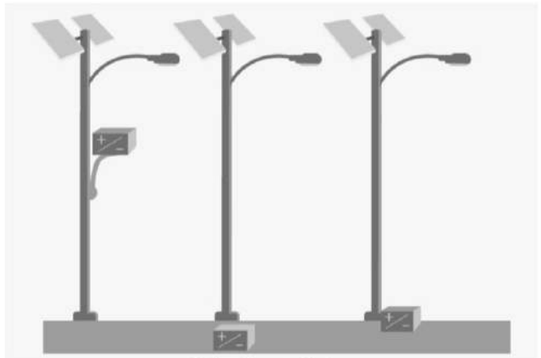
Figure 11.6 Sample Specific Sustainable Strategies under Effective Governance

*Sources: https://www.clipartkey.com/view/ToowRT_fund-png-clipart-emergency-fund/*
*Web Vectors by Vecteezy https://www.vecteezy.com/free-vector/web*
*https://iconscout.com/icon/emergency-vehicle-1901819*
*http://clipart-library.com/clip-art/fire-truck-silhouette-16.htm*

Integrated Energy Management




Rooftop Solar



Solar Street Lights


Power Wall


Energy Efficient Technologies


Incentive System for Compliances

Figure 11.7 Sample Specific Power-related Strategies under Green District

*Sources: House vector created by brgfx - www.freepik.com*
*https://www.pngitem.com/middle/iooxxxh_basic-components-of-solar-led-street-light-hd/Tesla.com*
*https://www.seekpng.com/ima/u2t4r5u2t4q8e6o0/VectorStock.com/23503757*

## 11.2.2 GREEN DISTRICT

### Sustainable Strategies under Respective Themes

Under Green District, policies and programs, there are three themes focusing on:

- Sustainable Urban Mobility and Transport Modes,
- Eco-Friendly Development Solutions, and
- Smart and Energy Efficient Structures

Specific power-related strategies are enumerated in the succeeding sections.

### Policies for Power

Policies focusing on the following shall be proposed:

- Designated establishments (with minimum annual energy consumptions of 500,000 kWh) to comply with integrated energy management system policy requirements
- In compliance with RA 11285 (Energy Efficiency and Conservation Act of 2019) and DOE Energy Conservation Design for Buildings and Utilities Guidelines
- Encourage use of building integrated renewable energy and energy efficient technologies
- Incentive system for compliances

### Programs for Power

Programs focusing on the following shall be proposed:

- Develop and design measures that promote energy efficiency, conservation, and sufficiency
- May include installation of renewable energy technologies and energy efficient technologies
- Examples: rooftop solar, solar street lights, power wall, energy efficient lights, appliances, and equipment

### Strategies under Water Conservation, Reuse and Recycling

In order for NGAC to become a green district, specific strategies are done for water in terms of the following:

- Conservation,
- Reuse, and
- Recycling.

With these, it is important to achieve a balanced development with nature conservation in NGAC.

Therefore, these strategies shall be proposed to maximize the utilization of one of the most important resources: water. Through treatment and recycling, the objective is to minimize wasteful consumption of water resources by the public.

Policies and programs shall be proposed to ensure water conservation.

### Policies for Water

Policies focusing on the following shall be proposed:

- Develop long-term water source
- Institute water conservation measures and efficient use of potable water
- Require dual waste-water piping within buildings to separate greywater from black water
- Require pre-treatment to meet influent water quality standards for non-residential water users
- Collection and storage of storm water for non-potable use

### Programs for Water

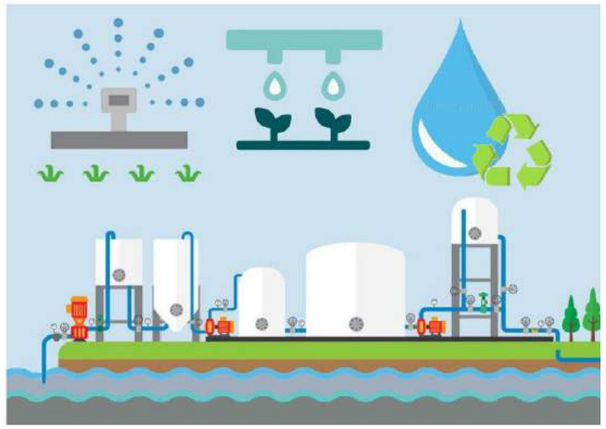
Programs focusing on the following shall be proposed:

- Prepare a feasibility study for use of surface water within and outside the development area for source of potable water
- Develop and design dual piping sewerage network for separate treatment of grey water and black water
- Re-use and recycling of treated grey water and storm water for irrigation and other non-potable use

Long-term water Source

Efficient use of Potable Water

Separate piping & treatment of wastewater



Reuse & recycling of greywater and storm water for irrigation and other non-potable use

Figure 11.8 Sample Specific Water-related Strategies under Green District

*Sources: Wastewater treatment plant: macrovector - freepik_com*

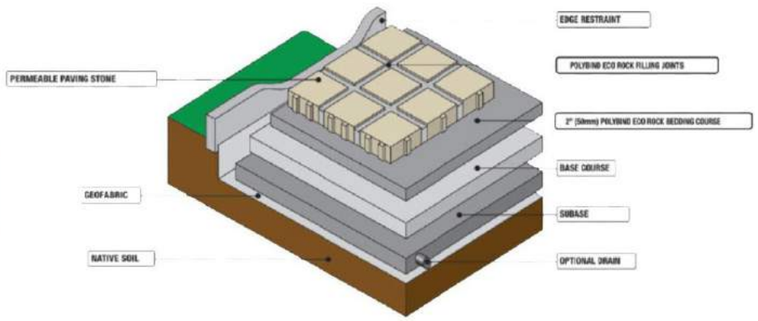

Service Radius Distances from Transit Stops

Protected zones for Nature and NMTs


CO2 Emission Limits

E-vehicles Adoption Program


Incentives for Public Transportation Companies and Users




Adoption of Environment-friendly Materials

Figure 11.9 Sample Specific Transport-related Strategies under Green District

*Sources: https://pngtree.com/freepng/bus-stop-passenger-rest-direction-sign-destination-sign_3863987.html; https://pngtree.com/freepng/vector-shop-icon_3762863.htmlcompany-building png from pngtree.com; Car vector created by freepik - www.freepik.com; istockphoto-1205901011-612x612; bicycle png from pngtree.com; https://freeicons.io/conference-icons/ticket-icon-5556; https://pnghut.com/png/ywRcngr91U/bus-tram-car-public-transport-rectangle-transparent-png; https://www.cleanpng.com/png-rock-pavement-permeability-joint-permeable-paving-2611289*

## Strategies under Transport

Transportation greatly contributes to the success of a development, while also being a major contributor of pollution and CO2 emissions. The following strategies are enumerated to be in line with the vision of being a green district.

## Policies for Transport

Policies focusing on the following shall be proposed:

- Setting of the boundaries of protected zones and safe refuge for both nature and the pedestrians and NMTs.
- Setting of the CO2 emissions standards / limits for the district
- Incentives for public transportation companies and users
- Facilitate the movement of high-priority traffic flows.
- Facilitate the desired scheme of traffic control.

## Programs for Transport

Programs focusing on the following shall be proposed:

- Creation and implementation of an e-vehicles adoption program for the public (and private) transportation
- Provision of transit stops for mass transportation, e.g., buses, with a set distance from services
- Adoption of environment-friendly materials and methods, e.g., permeable pavement systems, grassed swales, green roofs, bio-retention systems, infiltration systems, and porous pavements
- Implementation of Intelligent Transportation Systems and Technologies.
- Accommodating high-priority movements at intersections addresses both driver's expectations and intersection capacity. The 3 legs signalised junction shows an intersection where double left and right turn lanes are used to facilitate high-volume turning movements.
- Lane arrangements, location of channelization islands, and medians should be established to facilitate pedestrian access and the placement of signs, signals, and markings.
- Accommodate decelerating, slow, or stopped vehicles outside higher speed through traffic lanes.

## 11.2.3 PEOPLE CENTRIC DISTRICT

### Sustainable Strategies under Respective Themes

Under People Centric District, policies and programs, there are three themes focusing on:

- Liveability,
- Connectivity, and
- Walkability

Any area that is devoid of people will most likely feel “soulless” or like a “ghost town”. For NGAC to be a vibrant district, it is important to activate various locations to encourage people to participate in different types of activities.

Also, it is important for people to feel that the NGAC area is easily accessible, especially by walking, non-motorized transport, and even the availability of affordable public transport.

### Policies

Policies focusing on the following shall be proposed:

- EDesignation of higher development densities at certain areas, while considering the impact in traffic volume and required services and infrastructure
- Required percentage of dedicated shared and/ or pedestrian lanes
- Setting of maximum Emergency / Security response time based on travel time and distance
- Full application set / kit of the NGAC development controls (DCs)

### Programs

Programs focusing on the following shall be proposed:

- Parallel transport lines at major transit stops
- Continuing training in the full appreciation and correct application/use and compliance monitoring agent on the NGAC development standards and guidelines (DSG)
- Implementation of Traffic Calming Strategies, e.g., speed tables, controlled and uncontrolled pedestrian crossings
- Installation of CCTV monitoring for security / safety
- Ensuring well-lighted streets

Traffic Calming Strategies

Dedicated Shared / Pedestrian Lane


Installation of CCTV monitoring


Ensuring well-lighted Streets

Figure 11.10 Sample Specific Sustainable Strategies under People Centric District

*Sources: People vector created by pch.vector - www.freepik.com*
*Designed by macrovector / Freepik*
*Technology vector created by freepik*
*Background photo created by fanjianhua - www.freepik.com*

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# NGAC DETAILED MASTERPLAN

Task B2: BLOCK/ LOT INFORMATION PLANS

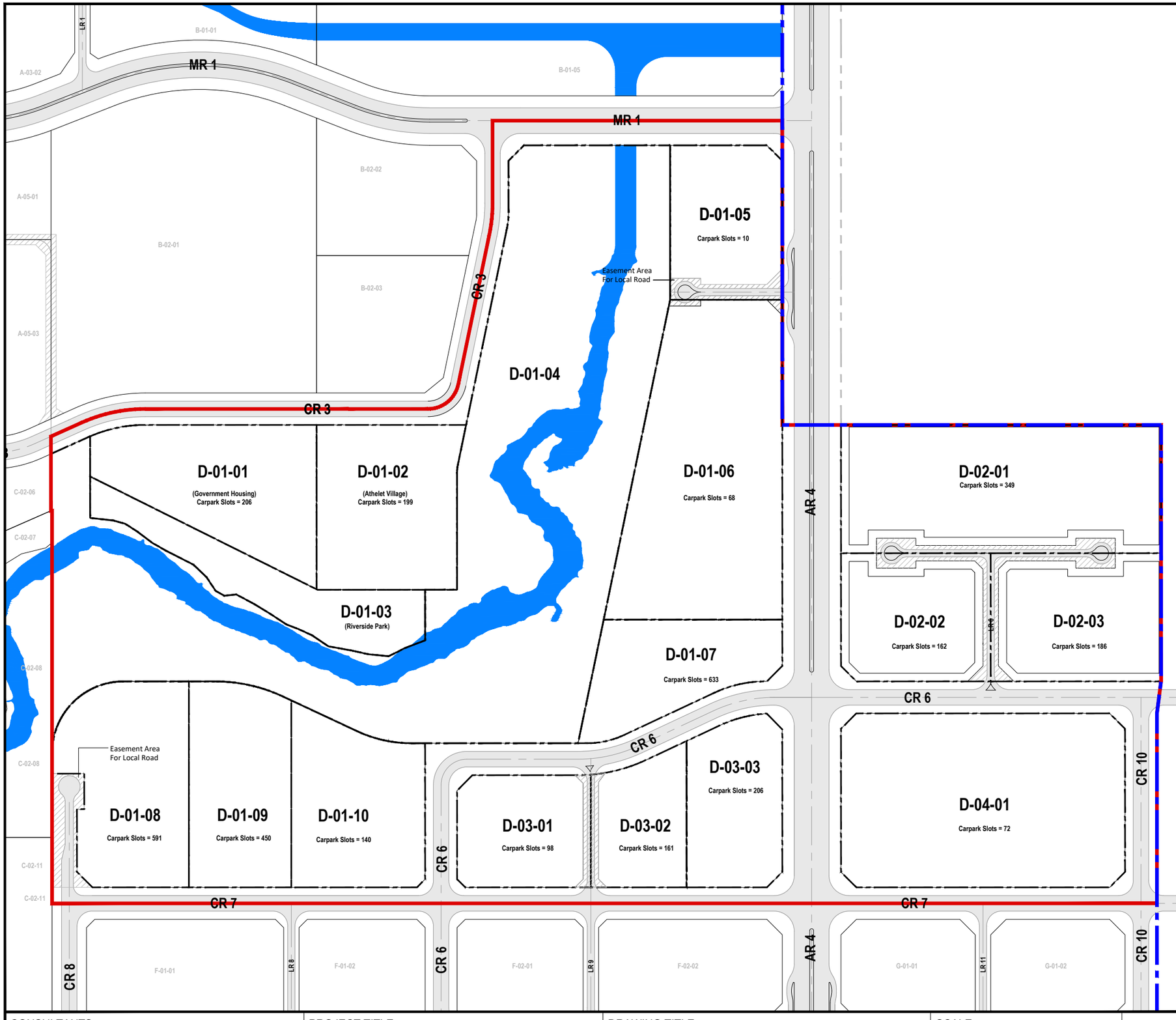
ZONE D: RIVER BEND ZONE

December 2020

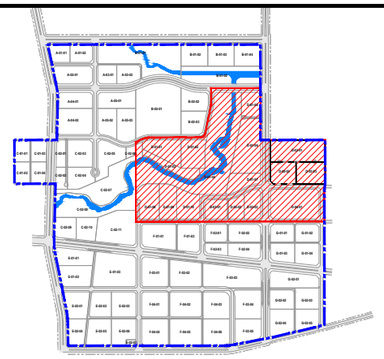
01

# BLOCK/ LOT INFORMATION PLANS AT ZONE LEVEL

## ZONE D: RIVER BEND ZONE




Key Plan:



| Land Use | No. of plots | Plot Names |
|---|---|---|
| R3 High Density Residential Zone | 5 | D-01-01, D-01-02, D-02-01, D-02-02, D-02-03 |
| R-MU Mixed Use Residential Zone | 2 | D-01-08, D-01-09 |
| C1 Neighbourhood Level Commercial Zone | 2 | D-03-02, D-03-03 |
| C2 City Level Commercial Zone | 1 | D-01-07 |
| GI-E General Institutional Education Zone | 2 | D-01-06, D-04-01 |
| GI-G General Institutional Civic Zone | 2 | D-01-10, D-03-01 |
| PRE-P Passive Recreational Zone | 2 | D-01-03, D-01-04 |
| PRE/CUL-A Active Recreational Zone | 1 | D-01-05 |
| Total | 17 | |

Note:
1. Lot areas shown are subject to verification and change by a Geodetic Engineer.
2. All easement areas indicated on the plan should be accessible by the public.
3. Open space easement areas may include Landscape easement, Plaza easement or Roadway easement.

# Carpark Slots Plan at Zone D

Legend:

- Edge of Curb
- Roadway
- Local Road Easement
- Zone D Boundary
- Property Line
- NGAC Boundary
- Waterbody

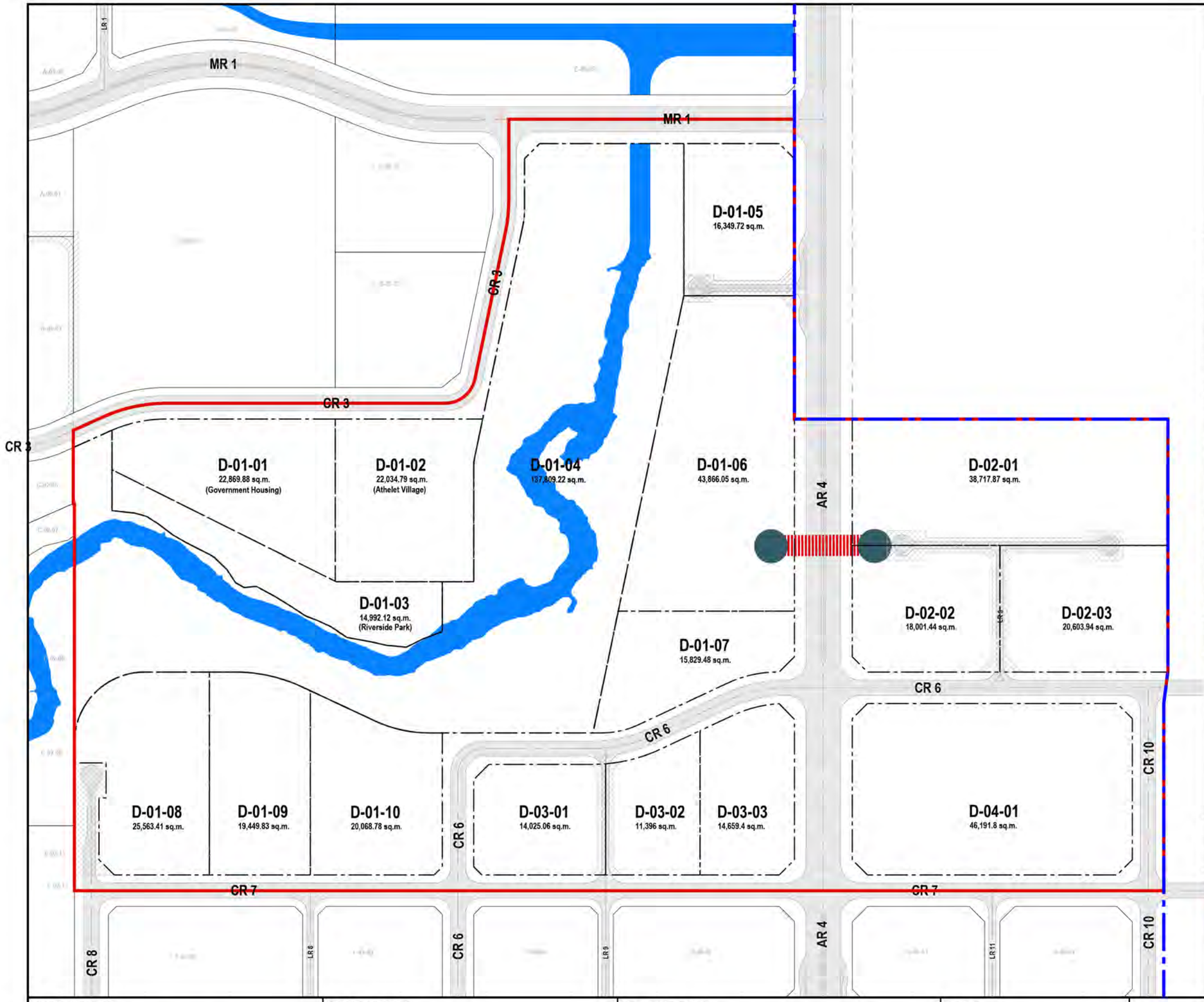
CONSULTANTS: PJIC, SURBANA JURONG

PROJECT TITLE: NGAC DETAILED MASTERPLAN

DRAWING TITLE: Block / Lot Information Plan at Zone D

SCALE: 0 10 50 100

N




Key Plan:

| Land Use | No. of plots | Plot Names |
|---|---|---|
| R3 High Density Residential Zone | 5 | D-01-01, D-01-02, D-02-01, D-02-02, D-02-03 |
| R-MU Mixed Use Residential Zone | 2 | D-01-08, D-01-09 |
| C1 Neighbourhood Level Commercial Zone | 2 | D-03-02, D-03-03 |
| C2 City Level Commercial Zone | 1 | D-01-07 |
| GI-E General Institutional Education Zone | 2 | D-01-06, D-04-01 |
| GI-G General Institutional Civic Zone | 2 | D-01-10, D-03-01 |
| PRE-P Passive Recreational Zone (Open Space) | 2 | D-01-03, D-01-04 |
| PRE/CUL-A Active Recreational Zone | 1 | D-01-05 |
| Total | 17 | |

Note:
1. Lot areas shown are subject to verification and change by a Geodetic Engineer.
2. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

## EPL and UPL Plan at Zone D

Legend:

- Zone D Boundary
- NGAC Boundary
- Property Line
- RROW Line
- Edge of Curb
- Roadway
- Local Road Easement
- Waterbody
- Vertical Interchange
- Vertical Interchange

CONSULTANTS:

PJIC SJ SURBANA JURONG

PROJECT TITLE:

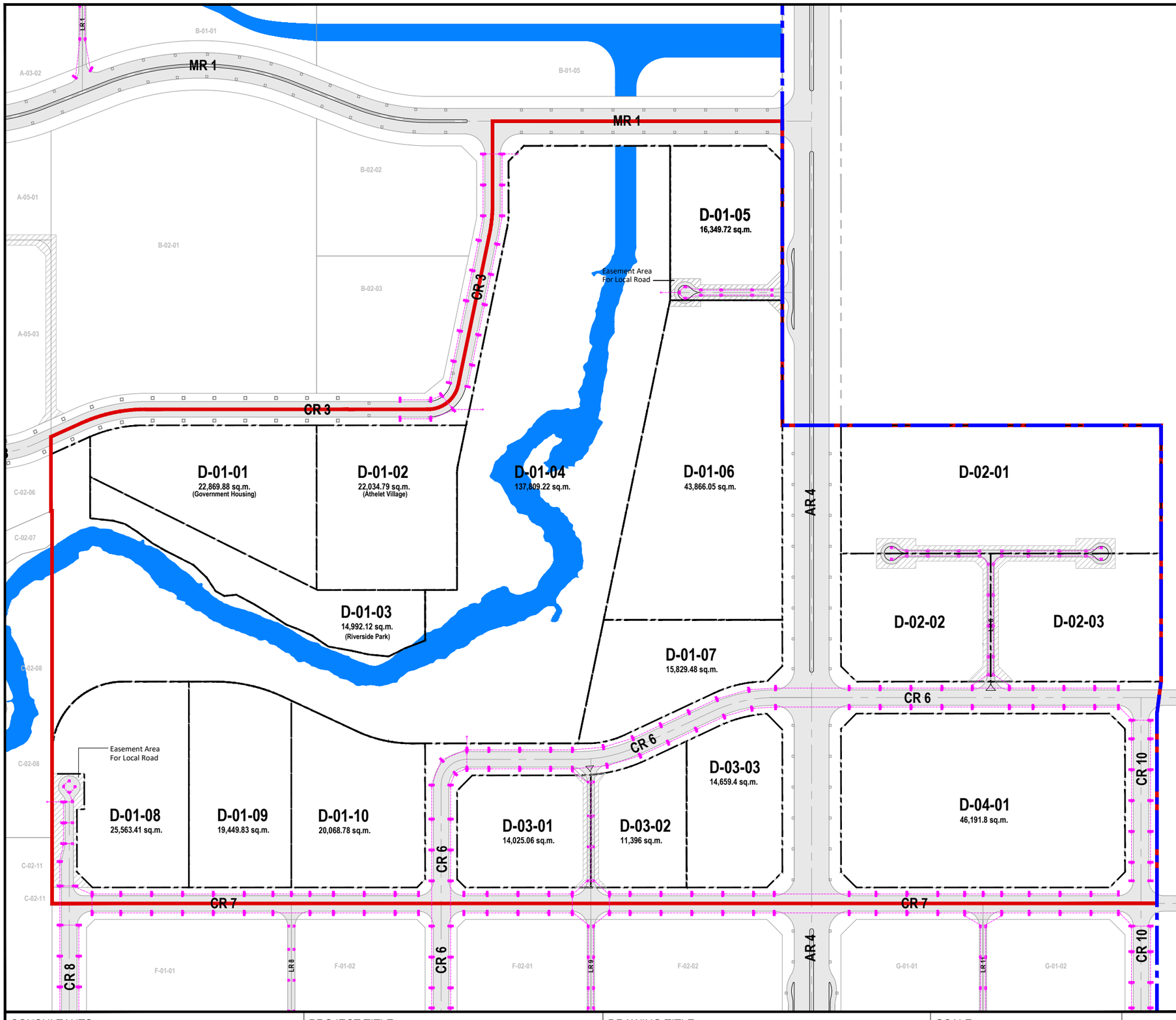
NGAC DETAILED MASTERPLAN

DRAWING TITLE:

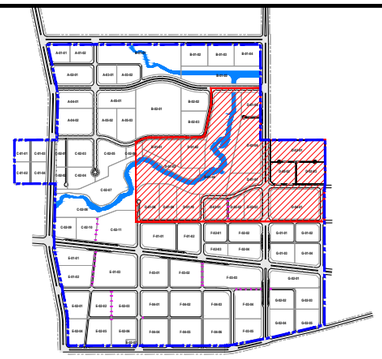
Block / Lot Information Plan at Zone D

SCALE:

N




Key Plan:



| Land Use | No. of plots | Plot Names |
|---|---|---|
| R3 High Density Residential Zone | 5 | D-01-01, D-01-02, D-02-01, D-02-02, D-02-03 |
| R-MU Mixed Use Residential Zone | 2 | D-01-08, D-01-09 |
| C1 Neighbourhood Level Commercial Zone | 2 | D-03-02, D-03-03 |
| C2 City Level Commercial Zone | 1 | D-01-07 |
| GI-E General Institutional Education Zone | 2 | D-01-06, D-04-01 |
| GI-G General Institutional Civic Zone | 2 | D-01-10, D-03-01 |
| PRE-P Passive Recreational Zone | 2 | D-01-03, D-01-04 |
| PRE/CUL-A Active Recreational Zone | 1 | D-01-05 |
| Total | 17 | |

Note:
1. All drainage manholes / catchbasins are indicative and is subject for approval.
2. Drainage lines along the Arterial Roads are for verification. These are existing or are under construction.
3. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

# Drainage Plan at Zone D

Legend:

- Roadway
- Local Road Easement
- Zone D Boundary
- Property Line
- NGAC Boundary
- Catchbasin/ Manhole
- Drainage
- Waterbody

CONSULTANTS:

PJIC SJ SURBANA JURONG

PROJECT TITLE:

NGAC DETAILED MASTERPLAN

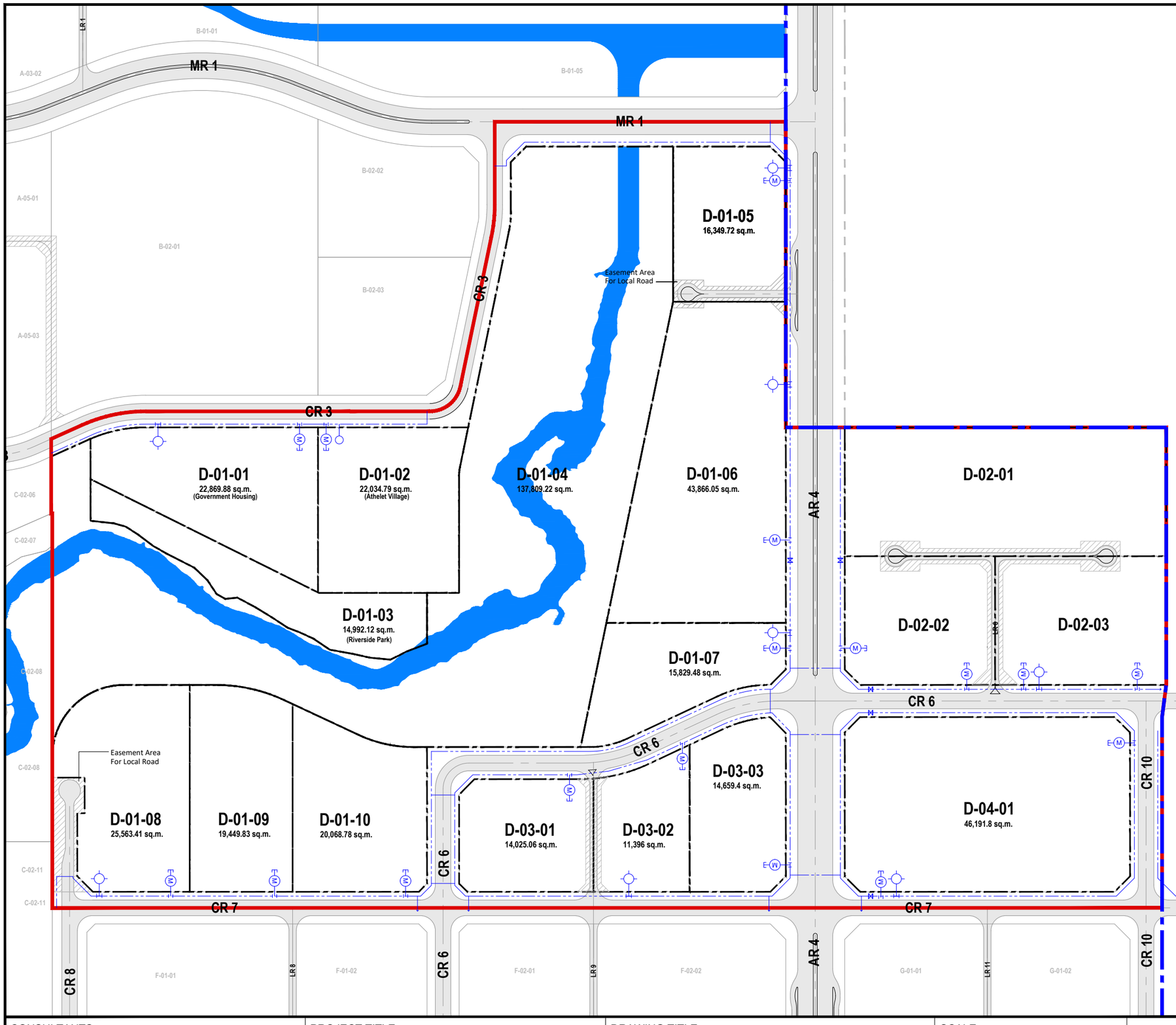
DRAWING TITLE:

Block / Lot Information Plan at Zone D

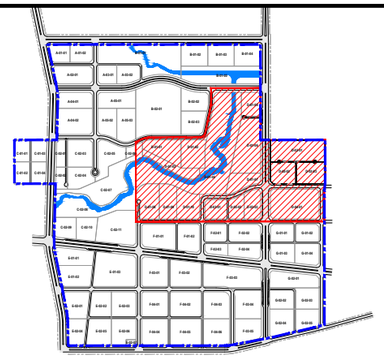
SCALE:

0 10 50 100

N




Key Plan:



| Land Use | No. of plots | Plot Names |
|---|---|---|
| R3 High Density Residential Zone | 5 | D-01-01, D-01-02, D-02-01, D-02-02, D-02-03 |
| R-MU Mixed Use Residential Zone | 2 | D-01-08, D-01-09 |
| C1 Neighbourhood Level Commercial Zone | 2 | D-03-02, D-03-03 |
| C2 City Level Commercial Zone | 1 | D-01-07 |
| GI-E General Institutional Education Zone | 2 | D-01-06, D-04-01 |
| GI-G General Institutional Civic Zone | 2 | D-01-10, D-03-01 |
| PRE-P Passive Recreational Zone | 2 | D-01-03, D-01-04 |
| PRE/CUL-A Active Recreational Zone | 1 | D-01-05 |
| Total | 17 | |

Note:
1. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

# Water Supply Plan at Zone D

Legend:

- Roadway
- Local Road Easement
- Zone D Boundary
- Property Line
- NGAC Boundary
- Waterbody
- Water
- Gate Valve
- Service Connection
- Fire Hydrant
- Blow Off Valve

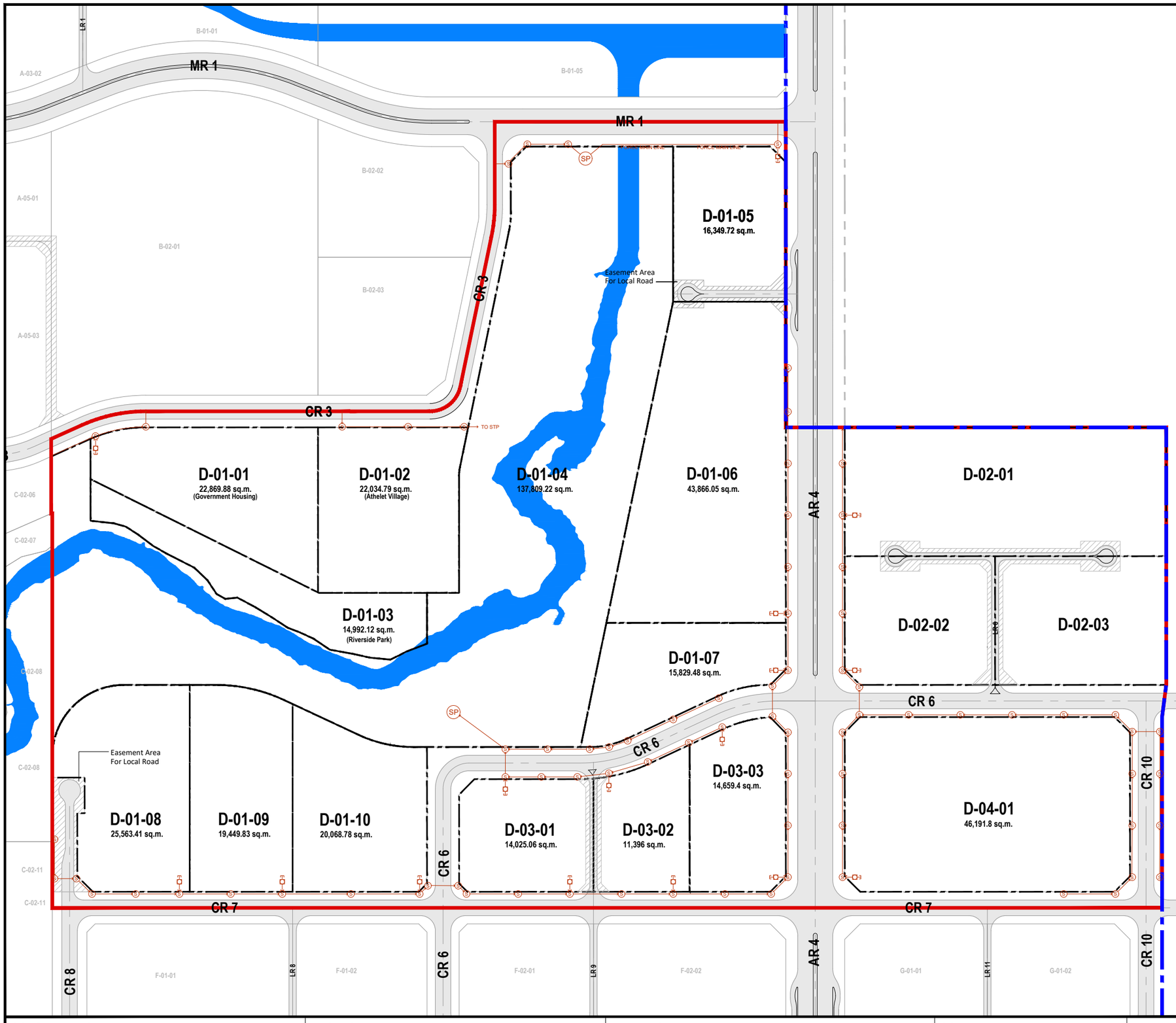
CONSULTANTS: PJIC, SJ SURBANA JURONG

PROJECT TITLE: NGAC DETAILED MASTERPLAN

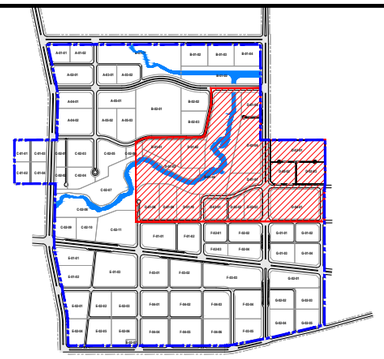
DRAWING TITLE: Block / Lot Information Plan at Zone D

SCALE: 0 10 50 100

N




Key Plan:



| Land Use | No. of plots | Plot Names |
|---|---|---|
| R3 High Density Residential Zone | 5 | D-01-01, D-01-02, D-02-01, D-02-02, D-02-03 |
| R-MU Mixed Use Residential Zone | 2 | D-01-08, D-01-09 |
| C1 Neighbourhood Level Commercial Zone | 2 | D-03-02, D-03-03 |
| C2 City Level Commercial Zone | 1 | D-01-07 |
| GI-E General Institutional Education Zone | 2 | D-01-06, D-04-01 |
| GI-G General Institutional Civic Zone | 2 | D-01-10, D-03-01 |
| PRE-P Passive Recreational Zone | 2 | D-01-03, D-01-04 |
| PRE/CUL-A Active Recreational Zone | 1 | D-01-05 |
| Total | 17 | |

Note:
1. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

## Sewer Plan at Zone D

Legend:

- Roadway
- Local Road Easement
- Zone D Boundary
- Property Line
- NGAC Boundary
- Waterbody
- Sewer
- Sewer Manhole
- Service Connection

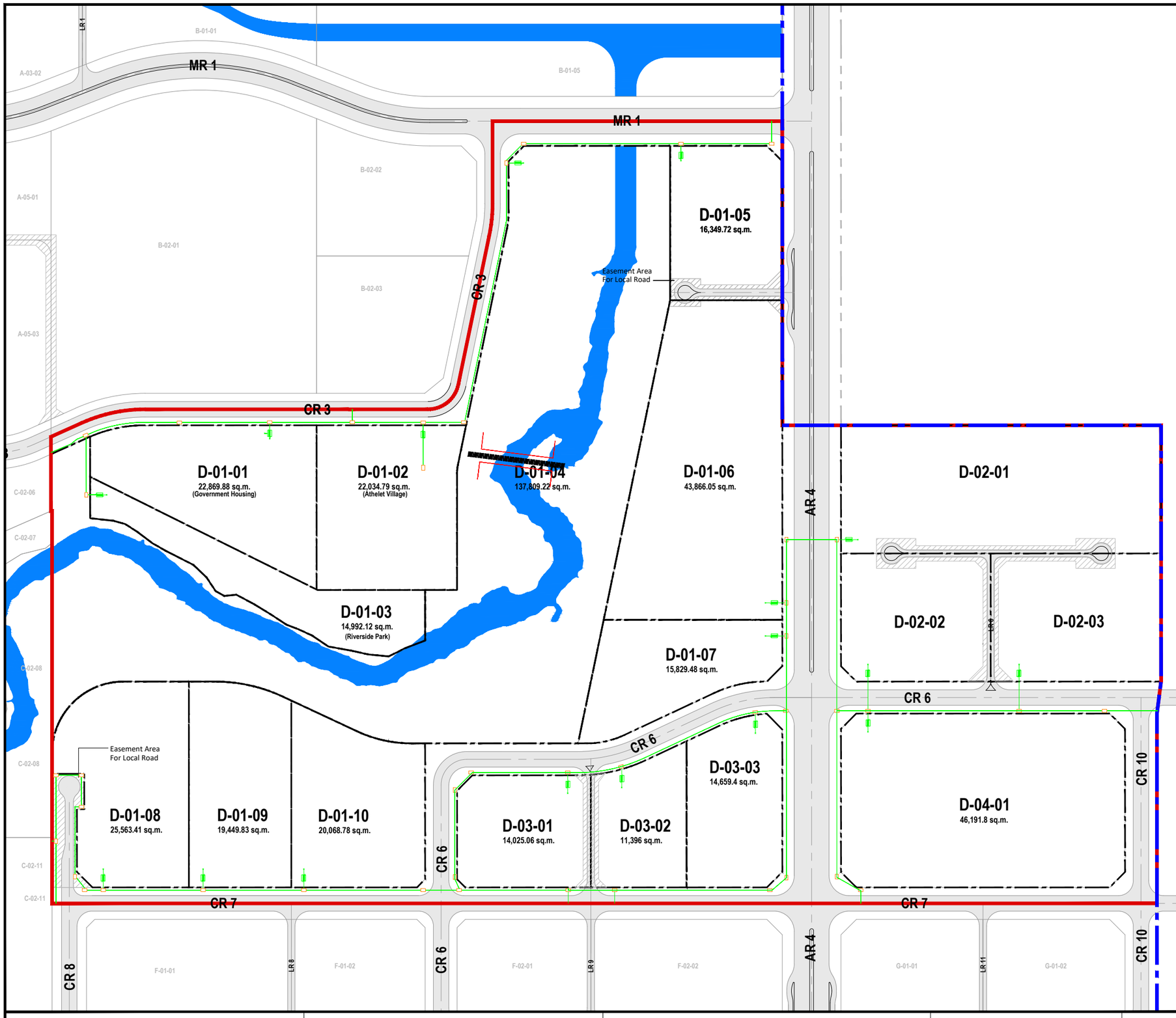
CONSULTANTS: PJIC, SURBANA JURONG

PROJECT TITLE: NGAC DETAILED MASTERPLAN

DRAWING TITLE: Block / Lot Information Plan at Zone D

SCALE: 0 10 50 100

N

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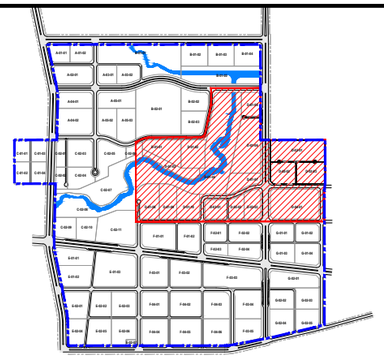


| Land Use | No. of plots | Plot Names |
|---|---|---|
| R3 High Density Residential Zone | 5 | D-01-01, D-01-02, D-02-01, D-02-02, D-02-03 |
| R-MU Mixed Use Residential Zone | 2 | D-01-08, D-01-09 |
| C1 Neighbourhood Level Commercial Zone | 2 | D-03-02, D-03-03 |
| C2 City Level Commercial Zone | 1 | D-01-07 |
| GI-E General Institutional Education Zone | 2 | D-01-06, D-04-01 |
| GI-G General Institutional Civic Zone | 2 | D-01-10, D-03-01 |
| PRE-P Passive Recreational Zone | 2 | D-01-03, D-01-04 |
| PRE/CUL-A Active Recreational Zone | 1 | D-01-05 |
| Total | 17 | |

Note:
1. Pad mounted switchgear and electrical manhole are purely indicative and shall be subject to final approved detailed design.
2. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

## Power Plan at Zone D

Legend:

- Roadway
- Local Road Easement
- Zone D Boundary
- Property Line
- NGAC Boundary
- Manhole
- Padmounted Switchgear
- Power
- Waterbody

CONSULTANTS:

PJIC SJ SURBANA JURONG

PROJECT TITLE:

NGAC DETAILED MASTERPLAN

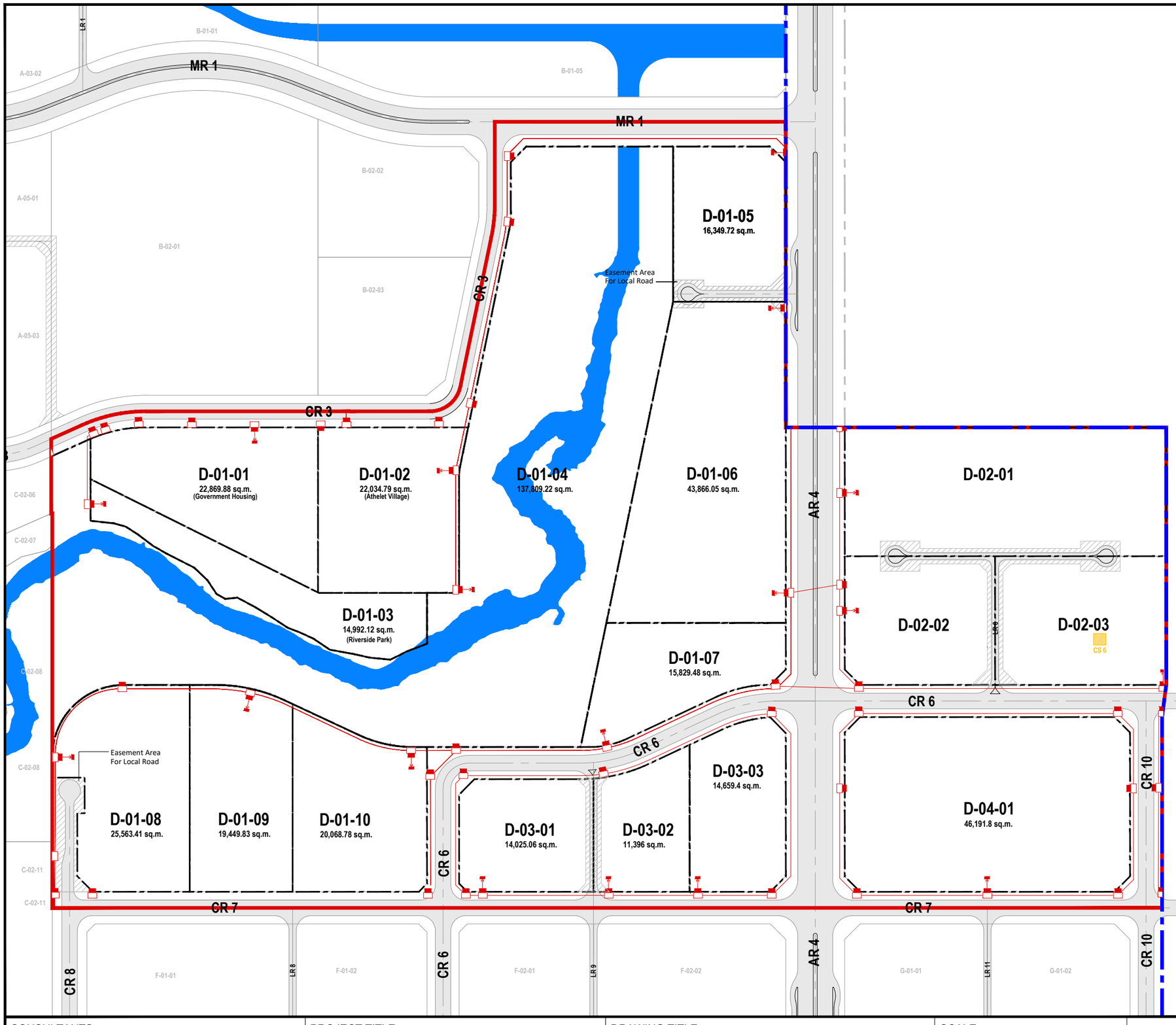
DRAWING TITLE:

Block / Lot Information Plan at Zone D

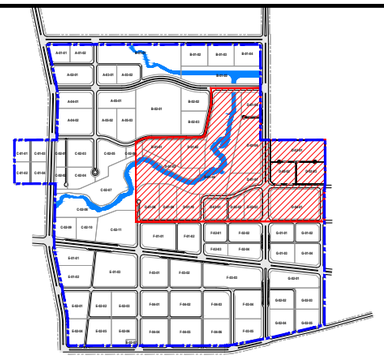
SCALE:

0 10 50 100

N




Key Plan:



| Land Use | No. of plots | Plot Names |
|---|---|---|
| R3 High Density Residential Zone | 5 | D-01-01, D-01-02, D-02-01, D-02-02, D-02-03 |
| R-MU Mixed Use Residential Zone | 2 | D-01-08, D-01-09 |
| C1 Neighbourhood Level Commercial Zone | 2 | D-03-02, D-03-03 |
| C2 City Level Commercial Zone | 1 | D-01-07 |
| GI-E General Institutional Education Zone | 2 | D-01-06, D-04-01 |
| GI-G General Institutional Civic Zone | 2 | D-01-10, D-03-01 |
| PRE-P Passive Recreational Zone | 2 | D-01-03, D-01-04 |
| PRE/CUL-A Active Recreational Zone | 1 | D-01-05 |
| Total | 17 | |

Note:
1. All cellular site locations/CATV/TTC are purely indicative and shall be subject to final approval by the Telecommunications Company / CATV provider.
2. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

## Telecom Plan at Zone D

Legend:

- Roadway
- Local Road Easement
- Zone D Boundary
- Property Line
- NGAC Boundary
- Comm Ln&Conc. Manhole
- Comm. Conduit Stubout
- Tel. Terminal Cabinet
- Tower
- Waterbody

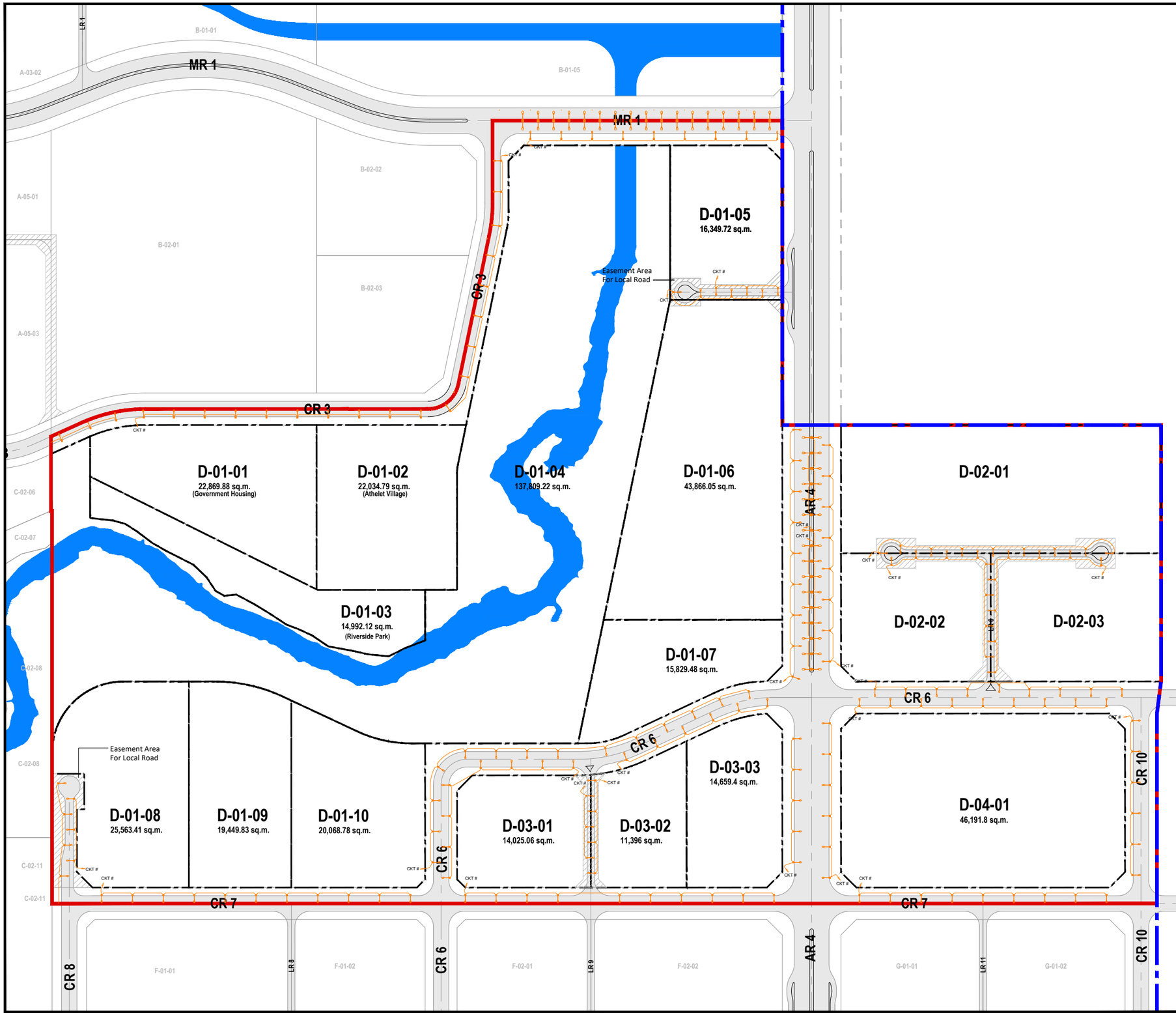
CONSULTANTS: PJIC, SURBANA JURONG

PROJECT TITLE: NGAC DETAILED MASTERPLAN

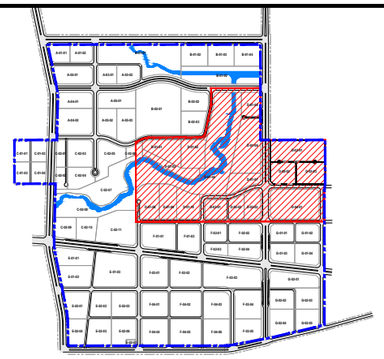
DRAWING TITLE: Block / Lot Information Plan at Zone D

SCALE: 0 10 50 100

N




Key Plan:



| Land Use | No. of plots | Plot Names |
|---|---|---|
| R3 High Density Residential Zone | 5 | D-01-01, D-01-02, D-02-01, D-02-02, D-02-03 |
| R-MU Mixed Use Residential Zone | 2 | D-01-08, D-01-09 |
| C1 Neighbourhood Level Commercial Zone | 2 | D-03-02, D-03-03 |
| C2 City Level Commercial Zone | 1 | D-01-07 |
| GI-E General Institutional Education Zone | 2 | D-01-06, D-04-01 |
| GI-G General Institutional Civic Zone | 2 | D-01-10, D-03-01 |
| PRE-P Passive Recreational Zone | 2 | D-01-03, D-01-04 |
| PRE/CUL-A Active Recreational Zone | 1 | D-01-05 |
| Total | 17 | |

Note:
1. All streetlight locations are purely indicative and shall be subject to final approve detail design .
2. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

## Street Lighting Plan at Zone D

Legend:

- Roadway
- Local Road Easement
- Zone D Boundary
- Property Line
- NGAC Boundary
- Single Roadway Lamp Post
- Double Arm Roadway Lamp Post
- Lighting
- Waterbody

CONSULTANTS:

PJIC SJ SURBANA JURONG

PROJECT TITLE:

NGAC DETAILED MASTERPLAN

DRAWING TITLE:

Block / Lot Information Plan at Zone D

SCALE:

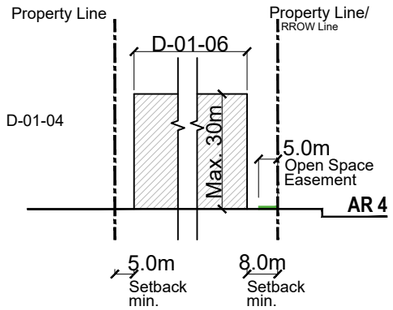
0 10 50 100

N

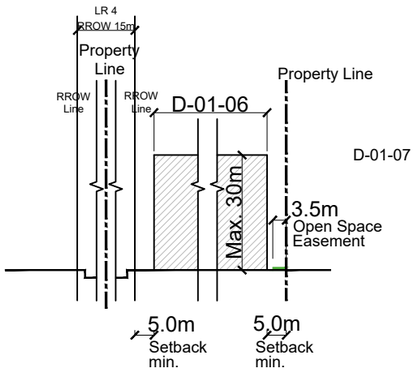
02

# BLOCK/ LOT INFORMATION PLANS

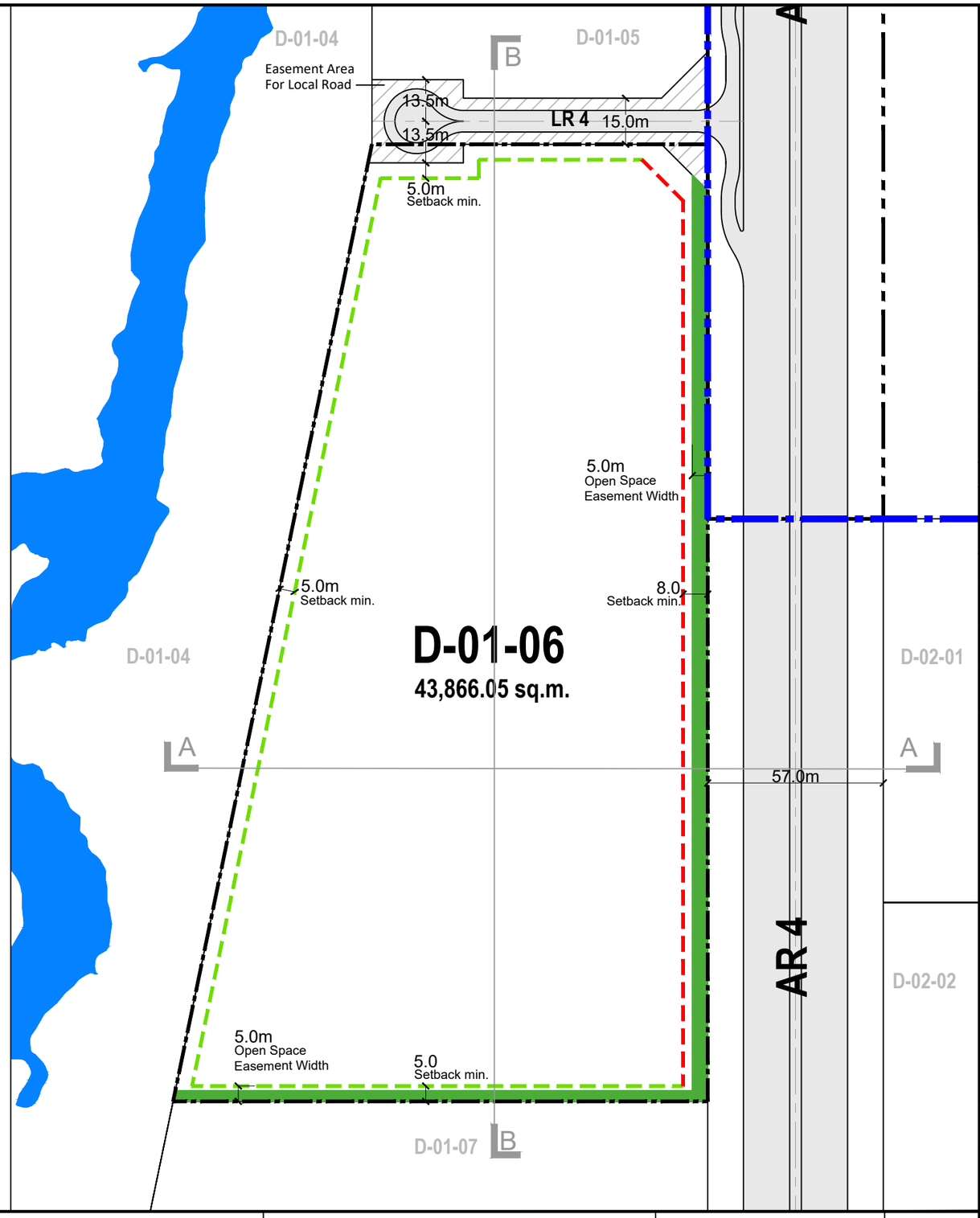
**ZONE D: RIVER BEND ZONE**



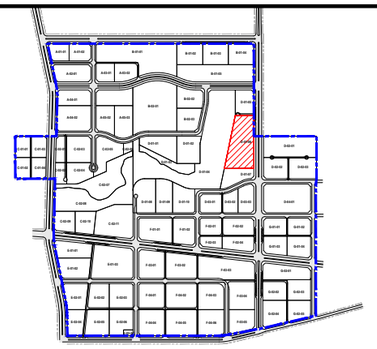

## Section A-A




## Section B-B




Key Plan:



| | |
|---|---|
| Lot ID | D-01-06 |
| Land Use Zoning | GI-E General Institutional Education Zone |
| Lot Area (sqm) | 43,866.05 |
| Max. PSO (%) | 50% |
| Max. BHL (m) | 30 |
| Max. FAR | 1.0 |
| Max. GFA (sqm) | 43,866 |
| Max.TGFA (sqm) | 54,833 |
| Min.Open Space Coverage[1] (%) | 30+10%=40% |
| Min. Landscape Replacement Area (%) | 50% |
| Carpark Lots | 68 |
| Building Setback | Frontage: 8m<br>Rear: 5m<br>Side: 5m |
| Min. Build to Line (%) | - |
| Open Space (Trees/ Plants) | Big trees spaced at 8-12m<br>Medium trees spaced at 4-6m<br>Small trees spaced at 3-4m |

Note:
1. Min. open space coverage includes both Softscape and Hardscape areas, but excludes roads and driveways.
2. Lot areas shown are subject to verification and change by a Geodetic Engineer.
3. Parameters listed above, except for setbacks and plantings, are prescribed based on the proposed Detailed Master Plan as of Nov 2020.
4. Parking lots numbers are based on the maximum GFA of each plot.
5. All easement areas indicated on the plan should be accessible by the public.
6. Open space easement areas may include Landscape easement, Plaza easement or Roadway easement.
7. Trees and shrubs design according to district theme. Tree canopy should have appropriate clearance in between buildings.
8. Building forms on sections are only indicative.
9. In the case that the resultant building footprint generated by the minimum setback yields a higher PSO than the prescribed PSO, the prescribed PSO will prevail.
10. Indicative existing location and realignment of waterbody to be confirmed with a detailed survey. Easements and setbacks shall conform to the recommendations of the River Study Report in Nov 2017 by ADB. Exact locations of bridge crossings shall be confirmed upon detailed survey of the river bank.
11. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

## Block / Lot Information

Legend:

- 5m Building Setback
- 8m Building Setback
- Open Space Easement Area
- Roadway
- Local Road Easement
- Property Line
- NGAC Boundary
- Waterbody

| CONSULTANTS: | PROJECT TITLE: | DRAWING TITLE: | SCALE: |
|---|---|---|---|
| PJIC SURBANA JURONG | NGAC DETAILED MASTERPLAN | Block / Lot Information Plan at D-01-06 | 0 5 10 20 50 |

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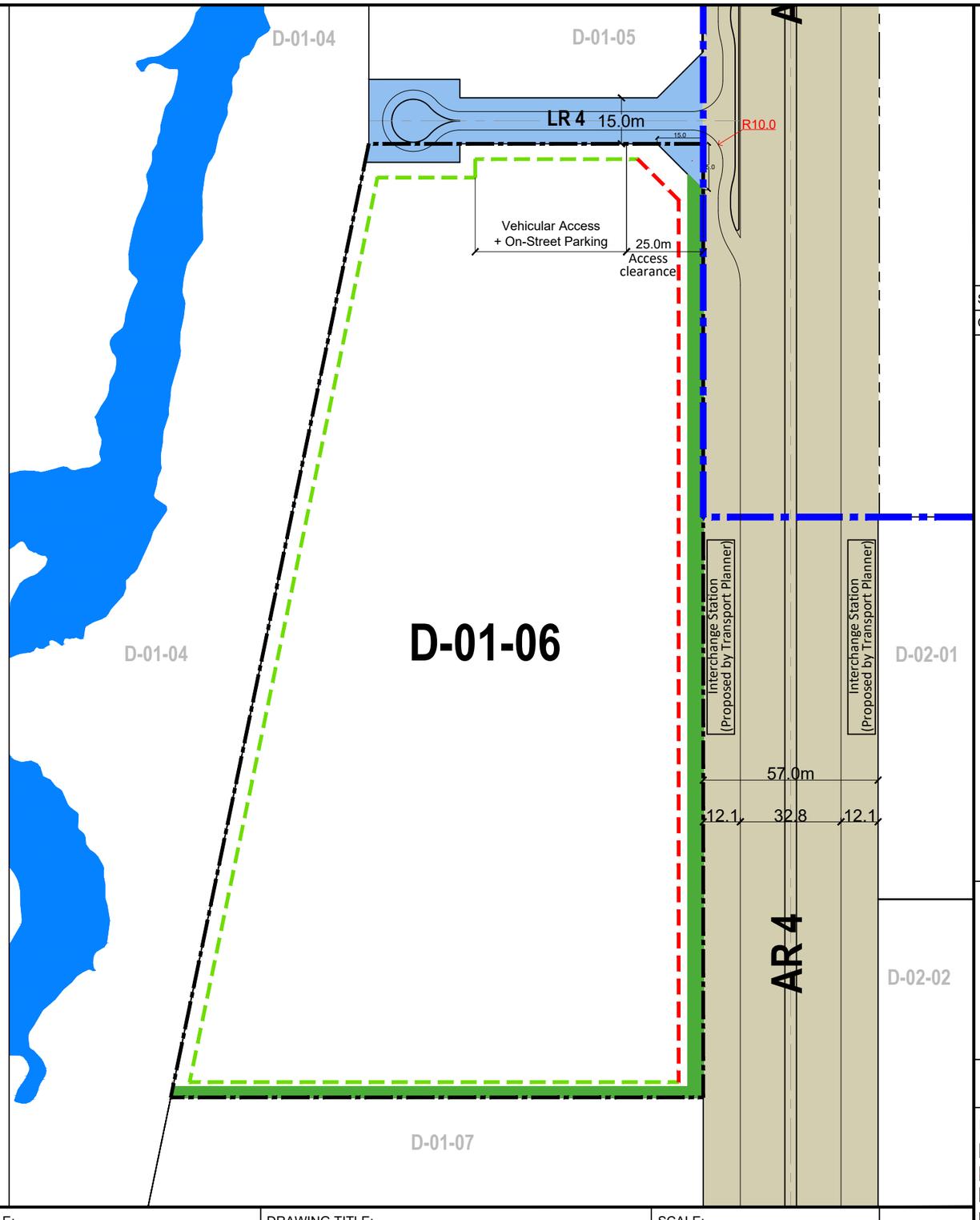
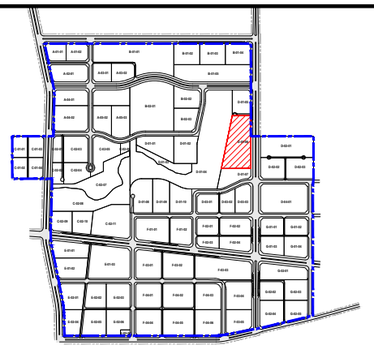



Key Plan:



| Street Name | AR 4 | LR 4 |
|---|---|---|
| On-Street Parking | X | 8 Total Slots (One Side) |

Note:

1. Street Parking not allowed within 25 meters from edge of plot. It's also not allowed within 25 meters from vehicular access.
2. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

## Vehicular Access, Road & Transport

Legend:

- 5m Building Setback
- 8m Building Setback
- Primary Arterial (57m)
- Local Road (15m)
- Property Line
- NGAC Boundary
- Waterbody

CONSULTANTS: PJIC SURBANA JURONG

PROJECT TITLE: NGAC DETAILED MASTERPLAN

DRAWING TITLE: Block / Lot Information Plan at D-01-06

SCALE: 0 5 10 20 50

N

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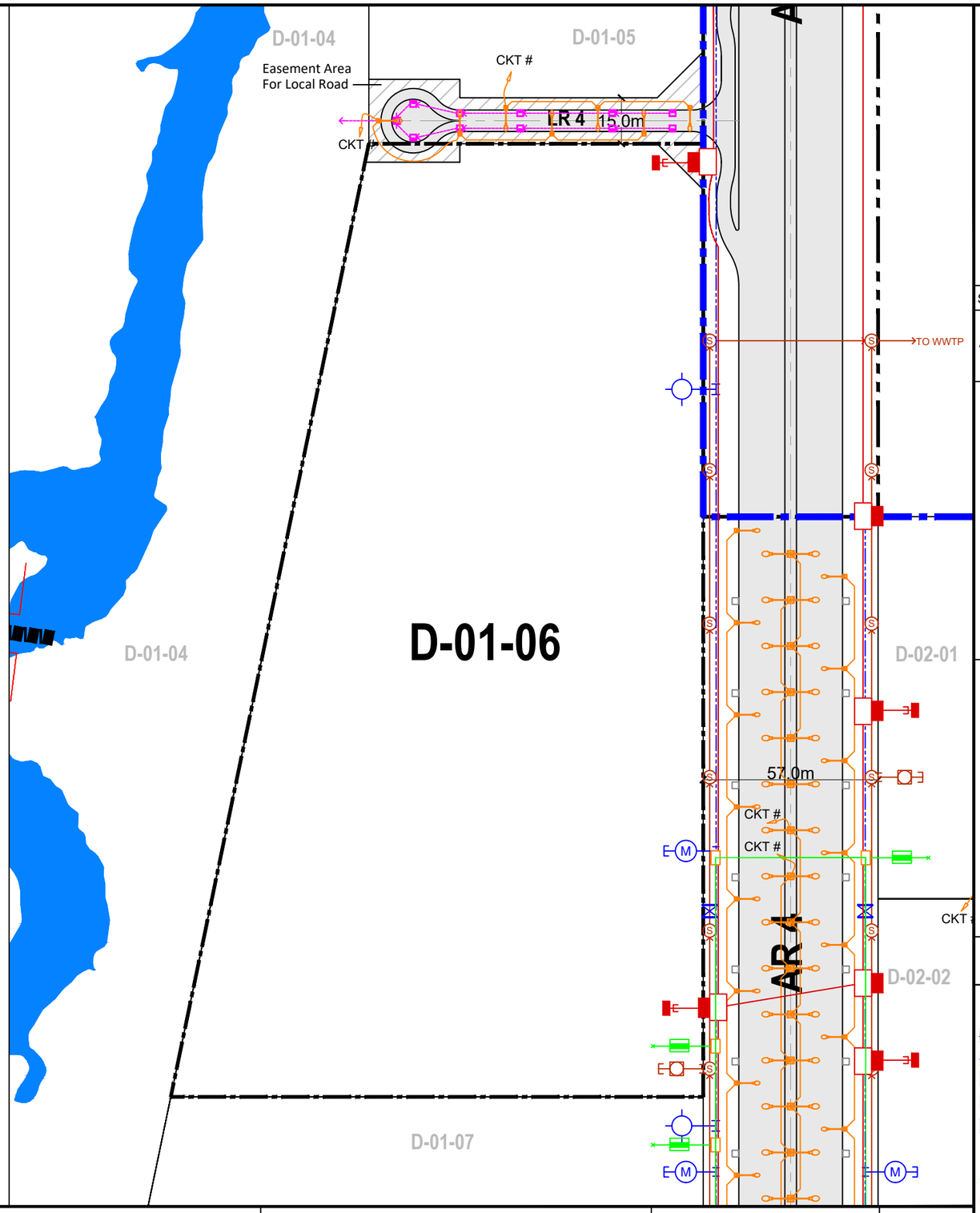
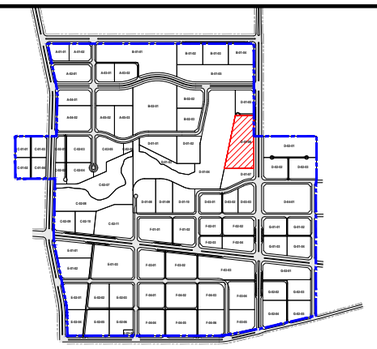



Key Plan:



| | |
|---|---|
| Street Name | AR 4 |
| Area Lighting | 15 NOS OF SL1<br>20 LUX MIN, 13 NOS OF SL2<br>20 LUX MIN, |

Note:

1. All drainage manholes/catchbasins are indicative and is subject for approval.
2. Drainage lines along the Arterial Roads are for verification. These are existing or are under construction.
3. All streetlight locations are purely indicative and shall be subject to final approve detail design .
4. Pad mounted switchgear and electrical manhole are purely indicative and shall be subject to final approved detailed design.
5. All cellular site locations/CATV/TTC are purely indicative and shall be subject to final approval by the Telecommunications Company / CATV provider.
6. All other information not indicated in the information plans but deemed necessary by the interested party/ies shall refer to Design Standard and Guidelines of NGAC and the National Building Code of the Philippines for additional development controls.

## Infrastructure and Utilities

Legend:

- Property Line
- NGAC Boundary
- Roadway
- Local Road Easement
- Waterbody
- Manhole
- Padmounted Switchgear
- Single Roadway Lamp Post
- Double Arm Roadway Lamp Post
- Power
- Lighting
- Catchbasin/ Manhole
- Drainage
- Water
- Gate Valve
- Service Connection
- Fire Hydrant
- Sewer
- Sewer Manhole
- Service Connection
- Comm Ln&Conc. Manhole
- Comm. Conduit Stubout
- Tel. Terminal Cabinet
- Tower

| CONSULTANTS: | PROJECT TITLE: | DRAWING TITLE: | SCALE: |
|---|---|---|---|
| PJIC SURBANA JURONG | NGAC DETAILED MASTERPLAN | Block / Lot Information Plan at D-01-06 | 0 5 10 20 50 |

Section III.

# New Clark City Design Standards and Guidelines

New Clark City Phase One Area

# Design Standards & Guidelines

## Stage 3 Report_Revision 05

22nd July 2019


Prepared by

SURBANA JURONG

in association with:

NIPPON KOEI

PKII


Submitted to

PJIC

PHILIPPINE JAPAN INITIATIVE FOR CGC INC.

Chapter 02

# Architecture and Urban Design

# 2.1 General Principles

2.1.1 The design of buildings within NCC must conform to the Design Standards and Guidelines detailed below, as well as all laws, ordinances, design standards, codes, rules and regulations related to land development and building construction, including the National Building Code of Philippines, the various planning and safety codes of the Philippines and any amending or new legislation.

2.1.2 The objective in drawing up the Design Standards and Guidelines is to encourage the creation of a harmonious and visually attractive NCC, with diverse architectural forms and a level of detail that is able to embody its vision and delight its residents and visitors.

2.1.3 The building massing of NCC is governed by several design standards and guidelines including Floor Area Ratio (FAR) or development density, building coverage, building setback, minimum lot size and building height.

# 2.2 Development Definition

2.2.1 Chapter 2.2 lists down the definition of the terms used in the Design Standards and Guidelines.

2.2.2 Zoning Plan is a planning tool that regulates the type of uses, development intensity, and building height, setback and coverage on any given plot of land to effectively guide development in a logical and orderly fashion. The Zoning Plan is meant to provide all stakeholders, including landowners and locators, with a clear picture of what can and cannot be developed on any particular plot.

Zoning regulations are segregated into three categories:

- Permitted Uses comply with the intended use for the particular zoning code, and are always permitted with or without conditions on application to the Declarant within the particular zone.
- Conditional Uses are usually activities which may create significant traffic, noise, or other impacts on the area surrounding the development in the particular zone. Such uses may be permitted with or without conditions on application to the Declarant within the particular zone.

  Each zone may allow different but compatible developments that are complementary in terms of use and scale. For example, a small-scale commercial development may be allowed in residential zones to provide convenience for residents to meet their daily shopping needs. Similarly, public facilities like schools, day care centers and religious facilities may be allowed in a residential zone if the facilities comply with standards for parking, noise, etc.

  Such conditional uses may be permitted after careful consideration and evaluation by the Declarant, and may be subject to certain conditions as deemed necessary by the review committee to ensure that the overall planning intention for the particular zone is not compromised.

- Prohibited Uses are uses that are not permitted under any condition, and includes activities that are deemed incompatible in the particular zone. For example, industrial uses are prohibited within the residential zones.

2.2.3 Ancillary Building refer to any building erected on a lot that is incidental to a primary building on the same lot, and the use of which is in connection with that primary building such as a detached garage.

2.2.4 Floor Area Ratio (FAR) refers to the ratio of a building's total permitted floor area to the total area of the plot of land upon which it is built.

2.2.5 Gross Floor Area (GFA) is the total floor area inside the building envelope, including the external walls, but excluding the areas exempted from the calculation of the GFA, as defined in Chapter 2.6.

# 2.2 Development Definition

2.2.6 Building Coverage is the percentage of the plot area occupied by the ground area of the primary and all ancillary buildings on the plot, inclusive of the shadow area cast by cantilevered building projections and excluding the following:

- Shadow area cast by bay windows with a projection of 0.5m or less;
- Roof eaves and sun shading projections; and
- Shadow area of a building from the third floor and above, to encourage viable landscaping at the ground level and shaded communal spaces, and promote building articulation and a variety of architectural designs.

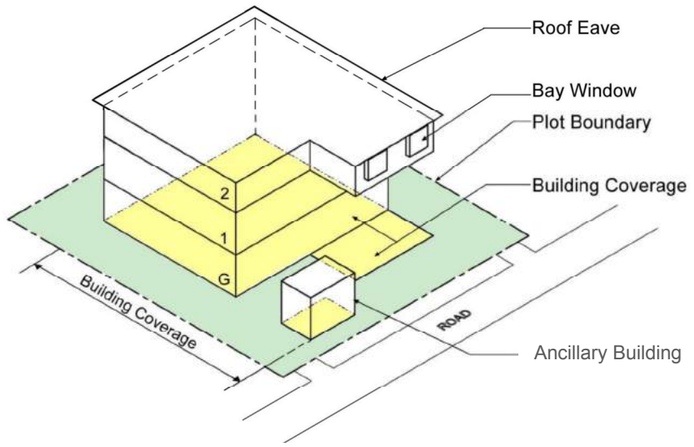



Fig. 2.1 Building Coverage

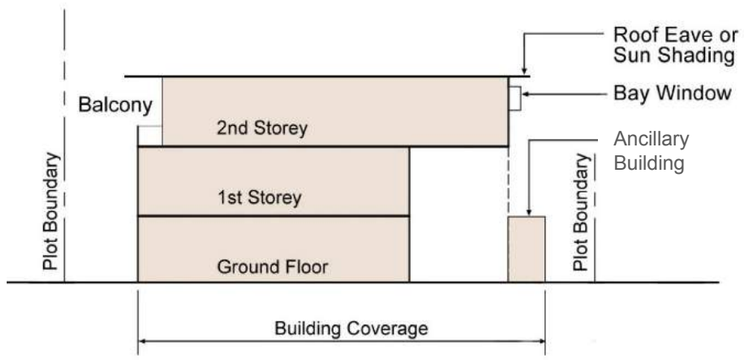



Fig. 2.2 Building Coverage Section

2.2.7 Building Height refers to the total height of a building in each facility, excluding:

- External parapets not exceeding 1.5m;
- Lift overruns;
- Antennaes not exceeding 6.0m; and
- Rooftop M&E service rooms and structures.

Along slopes or contoured topography, building height is measured as illustrated in Figure 2.4.

In all cases, building height must conform to the height restrictions of the Civil Aviation Authority of the Philippines (CAAP), National Building Code (NBC), as well as all laws and regulations.

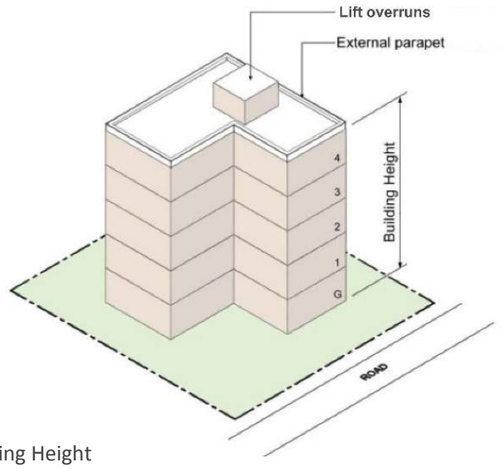



Fig. 2.3 Building Height

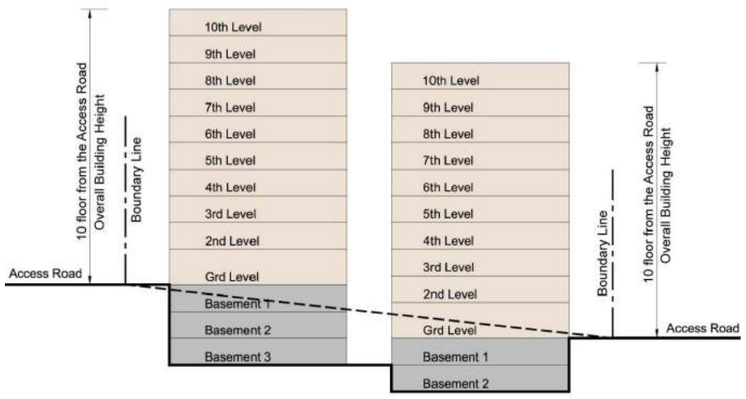



Fig. 2.4 Building Height Section

2.2.8 Building Setback refers to the minimum required distance between a building or structure and a street, road, river or other stream, shore or flood plain, or any other place that is subjected to protection.

Building Setback regulations are segregated into three categories:

- Front Setback refers to the minimum required distance as measured from the plot line fronting any road to the external main wall of any primary or ancillary building.
- Rear Setback refers to the minimum required distance as measured from the rear plot line to the external main wall of any primary or ancillary building.
- Side Setback refers to the minimum required distance as measured from the plot line that extends between the front and rear plot lines to the external main wall of any primary or ancillary building.

2.2.9 Build-to-Line refers to the requirement for a building façade, above an arcade, if any, to be built at the inner edge of the minimum setback requirement where a build-to-line is stipulated. Build-to-line is mandatory in certain areas to help generate activities along particular corridors or nodes. The objective is to integrate commercial developments with pedestrian access within the road Right-of-Way (ROW) and easement area, and to allow for building edge with some flexibility in building design, pedestrian entry, drop off canopy, landscape areas and outdoor refreshment areas.

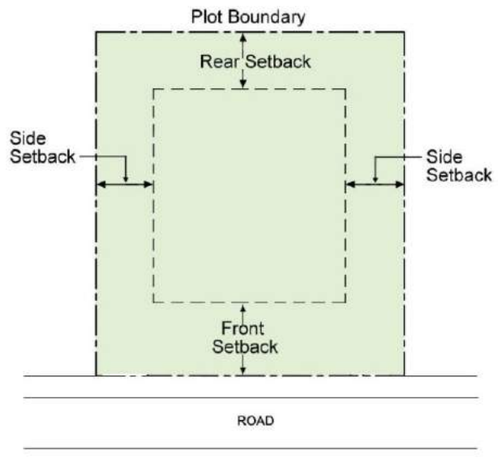



Fig. 2.5 Building Setback

# 2.2 Development Definition

2.2.10 Activity Generating Use (AGU) refers to commercial use that generates pedestrian footfall and improves the vibrancy of its immediate surroundings. This includes retail, entertainment, Food & Beverage outlets (e.g. restaurants, bars and lounges), sports and recreation (e.g. gymnasiums and fitness centers), and other similar uses.

2.2.11 Active Edge, also called active frontages, refers to ground floor uses that accommodate activities and provide a level of interaction between pedestrians and building uses, including AGUs, diversity of businesses, and entries to offices and apartments. The façade of ground floor uses shall have a high level of transparency, with a large proportion of windows and glazed doors. Actives edges increase casual surveillance and improve the vitality and safety of an area.

2.2.12 Commercial Façade is the façade of a building with a high level of transparency through the use of windows and glazed doors that are able to visually engage the pedestrian passing by. A commercial façade implies vibrant shopfronts that avoid the use of long blank walls.

2.2.13 Outdoor Refreshment Area (ORA) is an alfresco or outdoor dining area that is permitted within the lot, including the building setback. The allowable extent of ORA shall comply with the requirement of emergency vehicle access (EVA) and is subject to approval of the Declarant on application.

2.2.14 Amalgamation refers to the joining of two or more adjoining plots to form a single plot for development purposes. Amalgamation of plots are subject to approval of the Declarant on application. When amalgamation is permitted, the following conditions apply:

- Building setback requirements along the common boundary shall be omitted.
- Composition of permissible GFA of respective uses remain unchanged within each adjoining plot.
- Building height controls shall remain unchanged within each adjoining plot, in order to maintain the skyline.
- Other development controls shall remain unchanged within each adjoining plot.

2.2.15 Landscape Replacement Areas are landscape areas provided on the ground level or upper levels of the development. The diagram below shows the various types of LRAs that could be incorporated within a development (Fig.2.6).

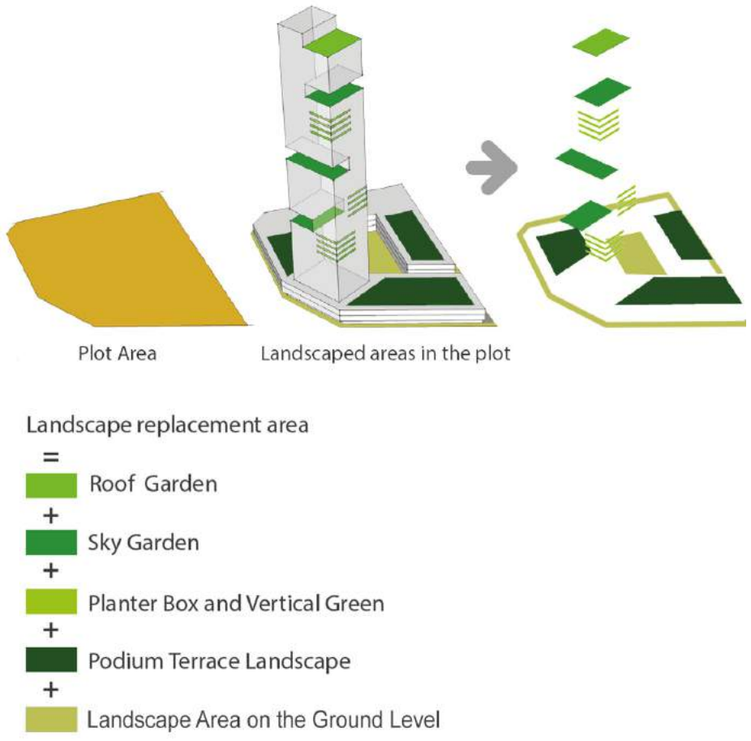



Fig. 2.6 Example of Landscape Replacement Areas

Disclaimer: The Development Definitions mentioned in the Design Standards and Guidelines are not exhaustive. More detailed and additional definitions may be provided by the Declarant, where applicable.

# 2.3 Outline Zoning

2.3.1 Accompanying the Master Plan is the NCC Overall Zoning Plan (Figure 1.7) and Tables 2.1 and 2.2, indicating which uses are permitted at all times with or without conditions, the uses which may be permitted by the Declarant with or without conditions on application, and the uses which are prohibited under any condition in the various zones. Where permission of the Declarant for a use is necessary, the application for such permission shall be addressed to the Declarant, from whom the appropriate forms may be obtained. The provision for application for such permission allows for greater flexibility in land use planning and better control of the development to meet changing needs.

2.3.2 Any use which may be permitted in accordance with the Design Standards and Guidelines must also conform with all other relevant legislation.

2.3.3 The types of uses have been studied and stipulated in the updated Master Plan and shall be strictly adhered to. If it is the intention to change the use of any existing land or building falling within any zone on the Plan, then such change may only be carried out if the intended use is a use which is always permitted, or if written permission for the intended use has been obtained from the Declarant. In lieu of an approval, Locators are to ensure that the overall zoning distribution still adheres to the Master Plan.

2.3.4 Temporary use of any land is permitted in all zones as long as they have received the prior written permission of the Declarant.

2.3.5 To preserve the vision of NCC, the following uses are prohibited within NCC Phase One Area:

- Cemetery
- Morgues Outside Hospitals
- Columbary
- Crematorium
- Cockfighting Arena

# 2.4 Land Use Zoning

Table 2.1 NCC Building Usage in Land Use Zoning (cont'd)

| Zoning Category | Permitted Uses<br>*Uses always permitted with or without conditions on application to the Declarant* | Conditional Uses<br>*Uses that may be permitted with or without conditions on application to the Declarant* |
|---|---|---|
| **Other Zones** | | |
| Government & Institutional Zone (G) | **Residential**<br>• Multi-family Housing (Townhouse, Condominium, Apartment, Flat)<br>• Ancillary Residential Facility (e.g. Ancillary Laundry Area, Ancillary Recreational Facility, Building Manager's Office, Private Swimming Pool, Refuse Disposal & Collection Point)<br>• Dormitory<br><br>**Commercial**<br>• Small Retail Shops (e.g. Convenience Store, Supermarket/ Grocery Store, Restaurant, Bakery/ Pastry Shop/ Bake Shop, Barber shop, Beauty Parlor, Laundry/ Dry Cleaning)<br>• Commercial Retail & Services (e.g. Fashion, Stationery Shop, Pawn Shop, Photographic Studio and Shop, Travel Agency, Hardware, Financial Institution/ Bank, ATM, Money Exchange, Service Trade, Massage Establishment, Commercial Bathhouse, Canteen, Fast Food Shop)<br>• Office<br>• Showroom excluding Motor-Vehicles<br><br>**Public Facility**<br>• Hospital, Health Institution<br>• Clinic/ Polyclinic, Dental Clinic, Sports Club, Gym<br>• Community Center<br>• Post Office<br>• Public Library<br>• Museum, Art Gallery, Concert Hall & Opera House, Cultural Center<br>• Place of Recreation, Sports or Culture, Multi-Purpose Arena<br>• Exhibition or Convention Hall<br>• Government Facility<br><br>**Open Space & Park**<br>• Public Park<br><br>**Infrastructure**<br>• Minor Infrastructure (e.g. Minor Electrical Substation, Road (excluding Expressway), Telecommunication Antenna, Utility Installation for Private Use of Locators)<br>• Ancillary Car Park | **Industrial**<br>• Warehouse<br><br>**Public Facility**<br>• Fire Station, Security Station<br>• Place of Worship<br>• Funeral/ Memorial Service<br><br>**Open Space & Park**<br>• Community Farm, Urban Farm |
| Education Zone (E) | **Residential**<br>• Dormitory<br><br>**Public Facility**<br>• Kindergarten, Day Care Center<br>• Primary & Secondary School<br>• Polytechnic, University, Vocational School<br>• Clinic/ Polyclinic, Dental Clinic, Sports Club, Gym<br>• Post Office<br>• Public Library<br>• Museum, Art Gallery, Concert Hall & Opera House, Cultural Center<br>• Place of Recreation, Sports or Culture, Multi-Purpose Arena<br><br>**Open Space & Park**<br>• Public Park<br><br>**Infrastructure**<br>• Minor Infrastructure (e.g. Minor Electrical Substation, Road (excluding Expressway), Telecommunication Antenna, Utility Installation for Private Use of Locators)<br>• Ancillary Car Park | **Commercial**<br>• Small Retail Shops (e.g. Convenience Store, Supermarket/ Grocery Store, Restaurant, Bakery/ Pastry Shop/ Bake Shop, Barber shop, Beauty Parlor, Laundry/ Dry Cleaning)<br>• Commercial Retail & Services (e.g. Fashion, Stationery Shop, Pawn Shop, Photographic Studio and Shop, Travel Agency, Hardware, Financial Institution/ Bank, ATM, Money Exchange, Service Trade, Massage Establishment, Commercial Bathhouse, Canteen, Fast Food Shop)<br><br>**Public Facility**<br>• Hospital, Health Institution<br>• Sport Complex, Stadium<br><br>**Open Space & Park**<br>• Community Farm, Urban Farm |

# 2.6 Gross Floor Area

2.6.1 Gross Floor Area is defined as the total sum of the gross horizontal areas of all floors of a building(s) to be erected on a plot, measured from the external face of external walls (or in the absence of such walls, the external perimeters), or mid-point of common or party walls.

2.6.2 When calculating the permitted GFA of a building(s), there are building areas that the Declarant has, at his sole discretion, determined that are:

- Always included;
- Always excluded;
- In specific/special circumstances excluded; and
- In specific/special circumstances eligible for bonus FAR.

2.6.3 The following building areas are always included in the calculation of GFA:

- Administrative offices
- Air handling unit rooms not exclusively serving the entire building
- All indoor sports facility
- Balcony at building interior counted at 100%
- Bay window where the base of the bay is less than 1 meter from the floor line
- Changing room and locker room
- Escalator space at each floor
- Floor area measured to the exterior of perimeter walls and windows
- Floor space in accessory building
- Floor space in open or roof porch floor space in penthouse
- Lobby/ foyer Mezzanine
- Balcony of residential building at building exterior counted at 50%
- Balcony at all other buildings counted at 100%
- Toilet and bathroom
- Any other floor space not specifically excluded in this definition

2.6.4 The following building areas that are always excluded in the calculation of GFA, provided the Declarant is satisfied that they are constructed for this sole purpose, are:

- Covered areas used for parking and driveways, services and utilities
- Loading and unloading area for motor vehicles
- Vertical penetrations in parking floors where no residential or office units area is present
- Areas to be occupied solely by machinery or equipment for any elevator, air-conditioning or heating system, mechanical or electrical risers, or refuse collection area exclusively serving the entire building
- Elevator shaft and fire stairs at each floor.
- Enclosed fire exit and exit enclosure.
- Uncovered gardens/landscape areas, children's play areas, uncovered and unenclosed recreational and sports facilities.
- Landscaped replacement areas, such as sky garden and terraces, area to be exempted is delineated by the 45 degree line taken from the bottom soffit of the floor or overhang above the landscaped deck. (Fig.2.10)
- Areas occupied by mandatory skywalk system and vertical interchanges that are open 24 hours a day or as determined by the management
- Arcade at ground level, measured up to 6.0m wide for arcades designated as a mandatory Arcade, and up to 4.0m wide for those without mandatory requirement
- Areas occupied by a mandatory and non-commercial communal sky bridge, up to 6.0m wide, that are open 24 hours a day and linking blocks within a single development
- Areas occupied by non-commercial arcades, footways, linkways, and underground pedestrian links, to enhance design flexibility in the provision of more pedestrian thoroughfares and linkages for ease of pedestrian movement
- Bicycle supporting facilities for commercial, industrial and public facilities. Refer to Chapter 2.19 for more detail.

The Declarant may permit any floor space to be excluded from the definition of GFA through modifications of the provision of the Design Standards and Guidelines.

2.6.5 In order to facilitate the implementation of the Master Plan, some floor areas may, at the discretion of the Declarant, be excluded from the calculation of GFA.

2.6.6 There are some areas in the building that may be eligible for bonus FAR. The building areas that may be eligible for bonus FAR must be critical to the day to day functioning of NCC and well-being of the community that live and work within it. These areas shall either facilitate public pedestrian movement or other public activities. The Declarant will determine where such bonus will be given, at his sole discretion. Chapter 3 of the Design Standards and Guidelines details scenarios where a building may be eligible for bonus GFA.

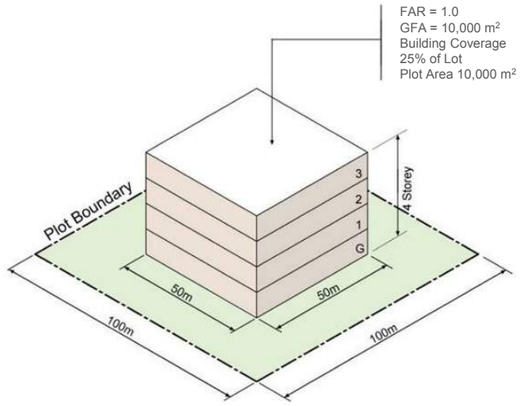



Fig. 2.8 GFA

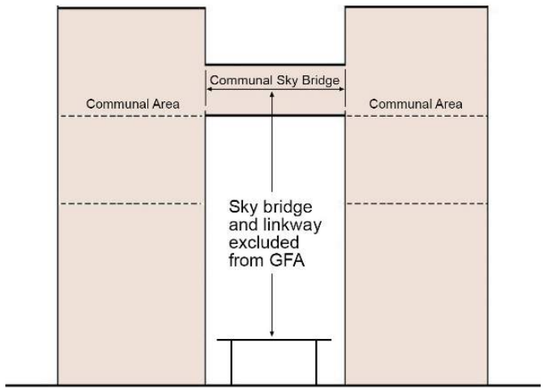



Fig. 2.9 Sky bridge and linkway

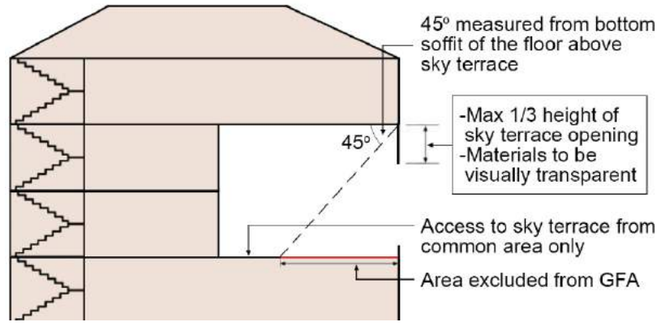



Fig. 2.10 45 degree line_GFA exemption

# 2.10 Landscape Replacement Areas

2.10.1 Every plot to be constructed within NCC is subject to the minimum landscape replacement areas controls.

2.10.2 The computation of the Landscape Replacement Areas will be determined by:

- Horizontal surface area of the softscape (e.g. permanent planting areas, including extensive green roofs)
- Horizontal surface area of the hardscape (e.g. communal facilities, urban farm)
- Vertical surface area of green walls (if any).

2.10.3 At least 40% of the overall required Landscape Replacement Areas shall be for permanent planting, ie. softscape. The remaining provision can be in the form of communal facilities like events plazas, water features and playgrounds, i.e. hardscape.

2.10.4 Except for rooftop urban farms, all horizontal landscaped (both softscape and hardscape) areas computed as part of the LRAs within developments have to be:

- Uncovered and exposed to the sky; or
- If covered, to be open sided, naturally ventilated and qualify for GFA exemption; and
- Communal and accessible by the public or occupants of the building

2.10.5 Rooftop urban farms can count towards up to 5% of the landscape replacement requirement as hardscape areas.

2.10.6 Vertical greenery and/or extensive green roofs can make up to 5% of the overall Landscape Replacement requirements (as a percentage of site area). They can be counted either as part of the softscape or hardscape components. The 5% for vertical greenery and extensive green roofs is allowed in addition to the 5% allowed for rooftop urban farms.

2.10.7 Requests to use vertical greenery and/or extensive green roofs, or rooftop urban farms, for more than 5% of the Landscape Replacement requirements can be considered based on the merits of the proposal.

2.10.8 The following are requirements for the 40% softscape areas:

- As a guide, a minimum soil depth of 1000mm is required for trees and palms, 500mm for shrubs and climbers and 300mm for ground covers;
- The softscape area will be determined by the horizontal area of the permanent planting bed;
- A combination of trees, palms, shrubs, ground covers and creepers is highly encouraged; and,
- Potted plants will not be counted as part of the softscape area as they can be easily removed

Table 2.7 Landscape Replacement Areas Control

| | Minimum Landscape Replacement Area (as % of Plot Area) | |
|---|---|---|
| Zoning Category | Ground Level | Total |
| **Residential Zones** | | |
| Low Density Residential Zone (R1) | 20% | 25% |
| Medium Density Residential Zone (R2) | 20% | 30% |
| High Density Residential Zone (R3) | 20% | 35% |
| Mixed Use Residential Zone (R4) | 15% | 35% |
| **Commercial Zones** | | |
| Neighborhood Level Commercial Zone (C1) | 15% | 30% |
| City Level Commercial Zone (C2) | 15% | 35% |
| Central Business District Zone(C3) | 15% | 40% |
| **Industrial Zones** | | |
| R&D Zone (I1) | 15% | 35% |
| Light Industrial Zone (I2) | 15% | 25% |
| General Industrial Zone (I3) | 15% | 20% |
| **Other Zones** | | |
| Government and Institutional Zone (G) | 20% | 30% |
| Education Zone (E) | 20% | 30% |

2.10.9 The remaining Landscape Replacement Areas can be designed as hardscape areas, including:

- Footpaths;
- Seating;
- BBQ pits;
- Events plazas;
- Water features;
- Playgrounds;
- Recreational facilities e.g. tennis courts and swimming pools;
- Vertical greenery & Extensive green roofs (up to 5%);
- Rooftop urban farms (up to 5%); and
- Communal roof gardens.

Service facilities such as vehicular ramps and surface car parks will not be computed as part of the required Landscape Replacement Areas.

Example of Rooftop Green

Example of Vertical Green

Fig. 2.11 Example of Landscape Replacement Areas

# 2.14 Building Design

2.14.1 Building design is governed by a range of factors and visual patterns including its massing, porosity, colors, texture and materials, etc. In determining the design of a building, it is important that it respects the character of buildings in the same block or district, and that they employ different but complementary architectural elements to avoid repetition and monotony in the city. Comparable and compatible design details shall also be employed at all sides of the building.

## 2.14.2 District Porosity

The height of buildings and strategic location of sky terraces shall be designed to improve porosity and views from each building. Views to major public parks and key waterbodies such as Central Park, River Park, and Forest Reserve Area shall benefit more developments, where possible. The placement and design of development blocks shall be sensitive to minimize blockage of views towards these public assets from surrounding areas as far as possible.

## 2.14.3 Block Porosity

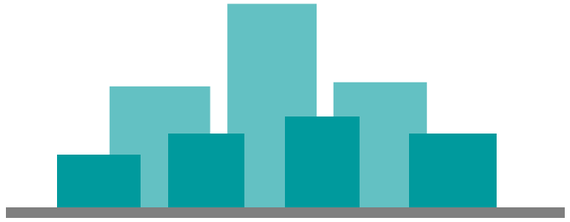
Fully enclosed building clusters shall be avoided to allow cross ventilation through internal courtyards. Block porosity shall be achieved by having sky terraces at various floors of a building and designing slender blocks with wider spacing in between.

Minimum spacing between buildings:
Spacing between buildings within the same plot is intended to visually break the massing of a building into separate blocks. Minimum spacing between buildings varies per the proposed storey heights of developments.

- 1-4 storeys (≤20.0m)(single-family house and town-house): 4.0m
- 1-4 storeys (≤20.0m): 6.0m
- 5-10 storeys (≤40.0m): 7.0m
- 11-18 storeys (≤68.0m): 10.0m
- 19-24 storeys (>68.0m-90.0m): 12.0m
- >24 storeys (>90.0m): 15.0m
- Between multi-storey car park building and other buildings: 7.0m

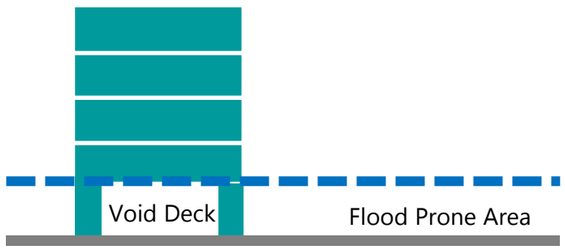
## 2.14.4 Building Porosity

Void decks are encouraged where possible in residential developments (R2 and R3) to enhance communal spaces planned between residential blocks, create comfortable spaces for residents and visitors alike, and to minimize the impact of flooding at flood prone areas, if any.



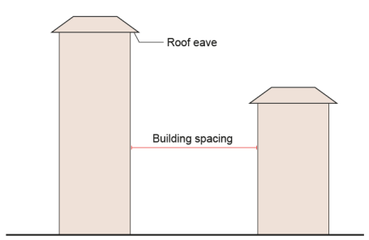
DISTRICT POROSITY

BLOCK POROSITY




BUILDING POROSITY

Fig. 2.19 Building Design_1



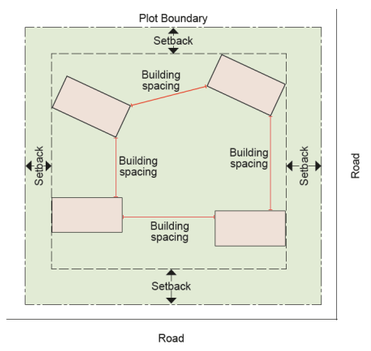




Fig. 2.20 Building Spacing

1 Skyline of NCC

2 Porous Block

3 Void Deck

Sources: (1) PJIC; (2) Hoerr Schaudt Landscape Architects; (3) Superloft;

# 2.14 Building Design

### 2.14.5 Green Infrastructure

Rain gardens and urban farms are to be integrated in each development, where possible, to provide ecosystem services, improve health and livability, provide space for local food production, as well as to mitigate heat island effect.

### 2.14.6 High Rise Development

High rise developments shall provide publicly accessible green spaces within the plot, as well as high rise or vertical greenery that complement the streetscape and urban landscape to create a greener environment.

### 2.14.7 Buildings Along Parks

Buildings along parks shall adopt building forms that 'look out' onto the park, such as incorporating upper floor balconies and deck terraces, to enhance visual connection to green open spaces. Buildings shall not act not as symbolic walls that block public access and views of parks, but as gateways with corridors that provide visual connection to the iconic skyline.

### 2.14.8 Local Culture and Design

Vernacular architecture, indigenous materials and plants are strongly encouraged to reflect the local culture. The design of the building shall respond to the local climate in both the overall form and materials used.

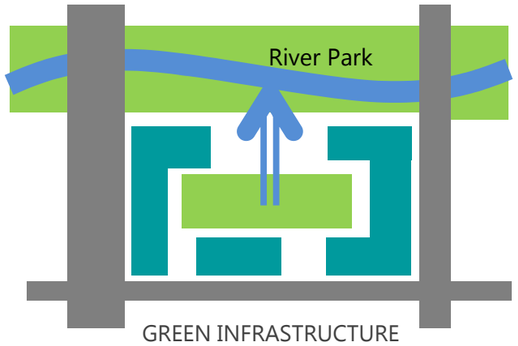



Fig. 2.21 Building Design_2


1
A Rain Garden


2
A High-rise Green Building and a Park


3
Buildings Look Out to a Park


4
A Building with Vernacular Design Elements

Sources: (1) Beckley Sanitary Board; (2) Tajawal; (3) Nanubhai Property; (4) The People's Association

# 2.15 Building Materials & Color

2.15.1 Buildings and other improvements, including landscaping, lighting and signage, must be consistent with the character of the environment in which they are located, as well as the requirements of the Design Standards and Guidelines.

2.15.2 Materials and colors used shall contribute to and enhance the character of the environment in which they are located.

2.15.3 The use of sustainable construction materials is encouraged. Examples of sustainable construction materials include steel, other metals, glass and recyclable substitutes of concrete, etc. High performance glass that reduce heat ingress while allowing high daylight penetration is encouraged to maximize performance and energy efficiency. External reflectance of materials shall not impair the visibility of drivers and pedestrians.

2.15.4 The selection of building materials and colors for the external finish of any building(s) constructed or to be constructed shall be capable of easy maintenance and shall be developed according to these Design Standards and Guidelines. The color, type and materials of buildings are subject to design approval of the Declarant.

# 2.16 Building Façade

2.16.1 All building walls, including parking structures, shall be designed with sufficient architectural details to create identity and still be in harmony with the context.

2.16.2 Buildings shall provide for a hierarchy of horizontal and vertical expression and patterns that shall relate to the particular form and proportion of a building. The purpose of detailing is to create consistency among the building frontage (tower) and other architectural features, such as the building entrance, corner, and variation in setback, etc.

2.16.3 All external laundry space for any residential unit of the building(s) constructed or to be constructed on the plot shall be recessed into such building(s) and no drying facilities shall be permitted to protrude beyond the outer face of the building(s).

2.16.4 All service areas and equipment of any building(s) constructed or to be constructed shall be fully screened and concealed from adjacent public streets, or located to the side or rear of the building(s). This includes all plumbing and other pipework, at grade or rooftop water tank, mechanical and telecommunications equipment, etc.

2.16.5 All parking above ground shall be confined in parking structures and be visually screened and from public streets. Parking structure side openings shall be concealed with grills or similar treatment of no more than 50% open and/or transparent in area.

2.16.6 Building facades fronting through-block links are encouraged to feature art work or shop windows to heighten the sense of place, and to add interest and variety to the pedestrian experience.


1 Example of Building Materials and Color


2 Example of Building Materials and Color

Fig. 2.22 Example of Building Materials and Color


3 Green façade of multiple storey car park

4 Shopfronts along Through Block Links

Fig. 2.23 Example of Facade Treatment of Buildings


5 Well screened services and equipment along the street

Sources: (1) Green City Trips; (2) PJIC; (3) Greenscreen; (4) StudyBay; (5) NLB Singapore

# 2.17 Entrance & Storefront

2.17.1 The main entrance to a building shall be clearly defined by its size and form as well as in the use of colors, textures, materials and lighting. Its size shall relate in scale to the overall configuration of the building.

2.17.2 The main entrance doorway shall be recessed into the façade and/or located under an arcade or canopy. Entry doors must not project beyond the property line when open and must comply with all access requirements as required by the Law to Enhance Mobility of Disabled Persons.

2.17.3 Storefronts along pedestrian routes shall be designed with at least 60% transparency, with multiple entrances into the building at ground level, to achieve an active street front.

2.17.4 The design and use of materials in the main entrance and storefront must comply with the requirements outlined in the building, fire and other relevant codes of Philippines. The materials used shall be durable and weather resistant.

2.17.5 Storefronts must also comply with the requirements detailed in Chapters 2.15, 2.16 and 5.

# 2.18 Roof

2.18.1 Utilities and equipment on roofs must be screened from top and sides with appropriate structures that are visually in line with the building design.

2.18.2 Roofs are encouraged to be designed with landscaping, urban agriculture and amenity space (e.g. gardens, pools and play areas, etc.), with access for tenants and residents.

2.18.3 Roofs are encouraged to be used for energy generation, including wind and solar collectors.

# 2.19 Fences, Walls & Gates

2.19.1 Gates shall be recessed towards the interior property, or shall not project beyond the property line when open. This is to ensure free and unimpeded movements along sidewalks and roads.

2.19.2 Fences shall act as visual screens as well as physical screens. They are to be developed according to these Design Standards and Guidelines.

2.19.3 Fences and walls are encouraged to be attractive, permeable and with a maximum height of 2 meters.

2.19.4 Fences and walls along the plot frontage, public parks and streets must have a minimum porosity of 50%. Landscape elements such as hedges are encouraged in place of fences or walls.

2.19.5 Fence and wall designs and materials are subject to design approval by the Declarant.

2.19.6 Fences are to be maintained by the Locator.


1 High transparency of shopfronts at the ground level along pedestrian ways

Fig. 2.24 Transparent Storefronts


2 Screening of utilities and equipment on roof

Fig. 2.25 Example of Roof Treatment_1


3 Green Roof


4 Solar collectors

Fig. 2.26 Example of Roof Treatment_2


5 Attractive and permeable fence


6 Fence with landscape elements


7 Hedges along a property line

Fig. 2.27 Example of Fence Treatment

# 2.20 Bicycle Facilities

2.20.1 All developments shall comply with the minimum bicycle parking space requirements in Table 2.9. Bicycle parking spaces should be located at convenient locations for cyclists, taking into consideration the alignment of adjacent cycling paths/ shared paths, public transportation nodes and amenities.

2.20.2 Buildings are encouraged to incorporate secure indoor bicycle storage for residents and tenants, as well as other supporting facilities like shower rooms.

2.20.3 Bicycle parking spaces provided will be exempted from Gross Floor Area (GFA) computation. The GFA exemption will also apply to surplus provision of bicycle parking spaces above minimum requirements if assessed by the declarant to be reasonable, given the context of the development.

2.20.4 Provision of the End-of-Trip facilities listed in Table 2.9. can also qualify for GFA exemption. This is to encourage locators to provide End-of-Trip facilities to better meet the needs of cyclists. Developers can submit their proposals for the declarant's evaluation.

2.20.3 The design of bicycle parking shall conform with the guidelines in Chapter 9.5

Table 2.9 Bicycle Facilities Requirement and GFA exemption

| Proposed Use | Minimum Bicycle parking space requirement | End-of-Trip Facilities that will be exempted from GFA computation |
|---|---|---|
| **Residential** | | |
| Residential Housing<br>Condotel<br>Dormitory<br>Workers' Accommodation | 1 bicycle parking space for every 6 dwelling units | No GFA exemption for bicycle supporting facilities as shower/ changing rooms are to be provided for within the home, or as part of the clubhouse facilities |
| **Commercial** | | |
| Small Retail Shops<br>Commercial Retail & Services<br>Night Club, Disco House & Dance Hall, KTV, Music Bar, Cocktail Lounge<br>Shopping Center/ Mall, Hyper-mart<br>Office<br>Place of Public Entertainment, Amusement Hall & Parlor, Entertainment Arcade, Cinema & Theater<br>Hotel<br>Service Apartment<br>Private Recreational Club, Holiday Chalet, Private Sports Club, Private Health Club | 1 bicycle parking space for every 300m2 of floor area, for floor area up to 15,000 $m^2$, and 1 bicycle parking space for every subsequent 600$m^2$ of floor area, for floor area in excess of 15,000$m^2$ | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |
| **Industrial** | | |
| R&D Facility<br>Automotive Repair Workshop<br>Motor Vehicle Showroom<br>Warehouse<br>Non-Pollutive Industrial Use<br>Industrial Uses Not Specified Above | 1 bicycle parking space for every 300$m^2$ of floor area, for floor area up to 15,000$m^2$, and 1 bicycle parking space for every subsequent 1,000$m^2$ of floor area, for floor area in excess of 15,000$m^2$ | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |
| **Public Facilities** | | |
| Hospital, Health Institution<br>Clinic/ Polyclinic, Dental Clinic, Sports Club, Gym<br>Community Center<br>Post Office<br>Public Library<br>Museum, Art Gallery, Concert Hall & Opera House, Cultural Center<br>Public Transport Hub (Rail Station, Terminal, Bus Interchange)<br>Exhibition or Convention Hall<br>Government Facility<br>Place of Worship | 1 bicycle parking space for every 150$m^2$ of floor area, for floor area up to 15,000$m^2$ and 1 bicycle parking space for every subsequent 500$m^2$ of floor area, for floor area in excess of 15,000$m^2$ | GFA exemption for bicycle supporting facilities, subject to:<br>• 1 shower stall per 10 bicycle parking spaces (about 1.35sqm per shower stall)<br>• Provision and size of lockers and PMD lockers to be subjected to evaluation<br>• 1 toilet per cluster of facilities<br>• Facilities should be located near the bicycle parking spaces for the convenience of cyclists |
| **Sports and Recreation** | | |
| Place of Recreation, Sports or Culture, Multi-Purpose Arena | 1 bicycle parking space for every 150$m^2$ of floor area, for floor area up to 15,000$m^2$ and 1 bicycle parking space for every subsequent 500$m^2$ of floor area, for floor area in excess of 15,000$m^2$ | No GFA exemption for bicycle supporting facilities as shower/ changing rooms/ lockers should be provided as part of the development |
| Sport Complex, Stadium | | |

Chapter 03

# Building Incentives

# 3.1 Introduction

3.1.1 This chapter highlights three types of developments that may be eligible for bonus GFA:

- Transit Oriented Developments
- Landmark Developments
- Sustainable Developments

3.1.2 All developments eligible for bonus GFA are required to submit applications to the Declarant and are subject to the approval of the Declarant.

# 3.2 Transit Oriented Developments

3.2.1 Public transport use shall be promoted by densifying developments around transport stations and providing good connectivity between developments and stations.

3.2.2 In Mixed Use Residential Zone (R4) and all Commercial Zones (C1, C2, C3), buildings or structures that are within a 300-meter radius from a planned Rail, BRT or LRT station may apply for bonus GFA of up to 5% of total GFA, and easing of building height regulations.

3.2.3 Buildings in the City Level Commercial Zone (C2) and Central Business District Zone (C3), and buildings directly adjacent to a rail, BRT or LRT station that build and maintain a direct at grade, above grade or below grade covered walkway to a Rail, BRT or LRT station, at the cost of the Locator, may apply for bonus GFA of up to 15% of total GFA, and easing of building height regulations.

**Example**

Bonus GFA for Buildings in the City Level Commercial Zone (C2) and Central Business District Zone (C3), and buildings directly adjacent to a rail, BRT or LRT station

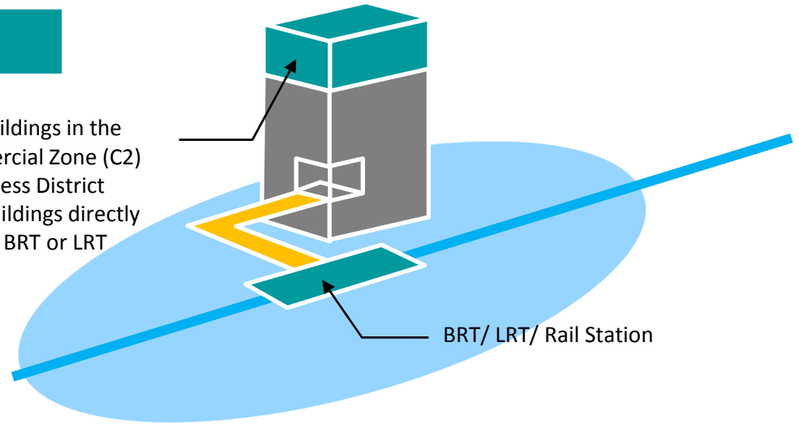
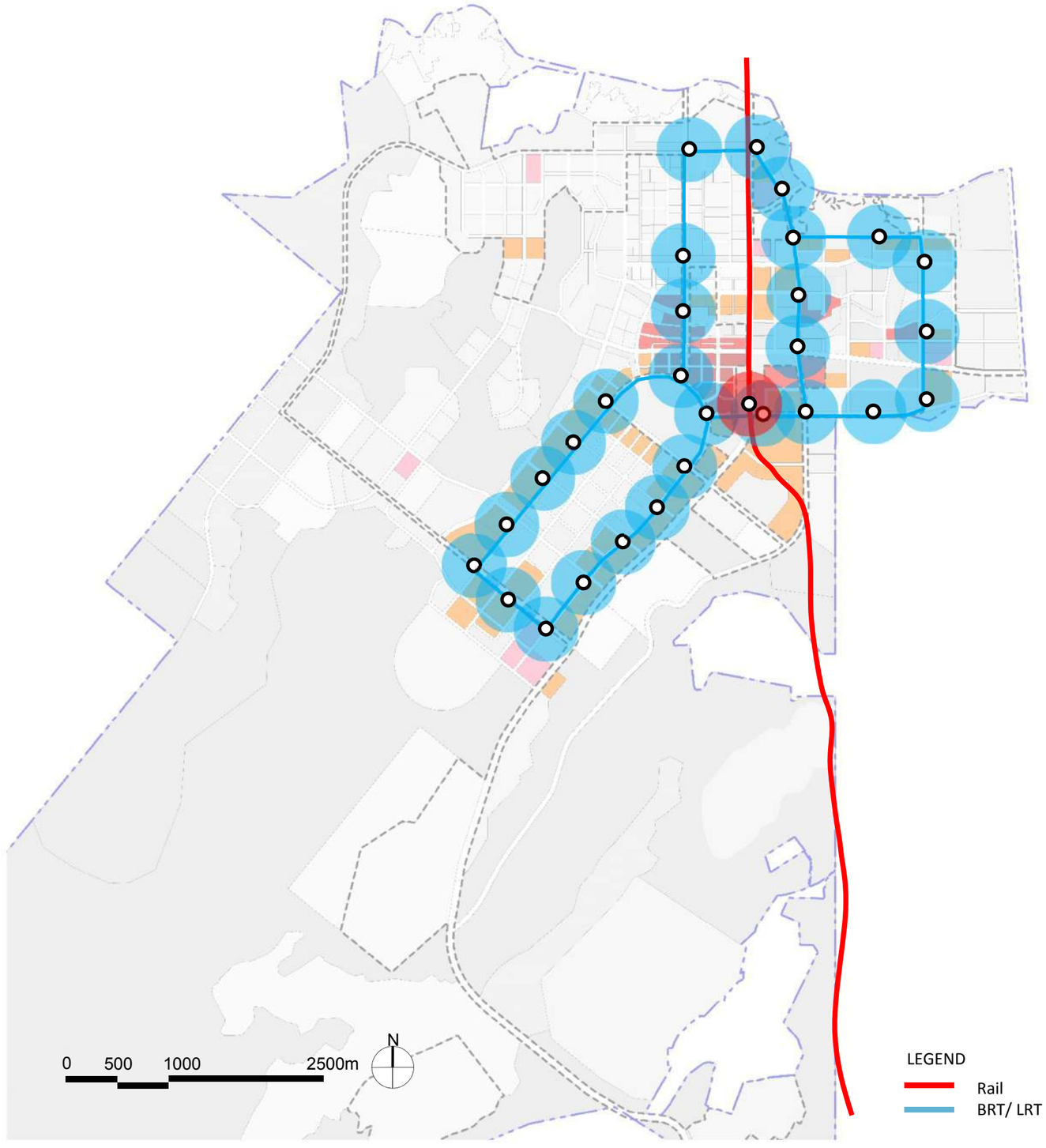



Fig. 3.1 Transit Lines and Stations




Note: Rail and BRT/ LRT alignment and the location of stations is subject to the final transport plan and design

# 3.4 Sustainable Developments

3.4.1 Buildings that fulfil criteria from any recognized green or sustainable building certification may apply for bonus GFA of up to 5% of total GFA.

## Examples of Recognized Green/ Sustainable Building Certification

BERDE
(Building for Ecological Responsive Design Excellence)
Philippines


Source: BERDE

LEED
(Leadership in Energy & Environmental Design)
US


Source: LEED

BREEAM
(Building Research Establishment Environmental Assessment Method)
UK


Source: BREEAM

BCA Green Mark Scheme
Singapore


Source: BCA Green Mark Scheme

CASBEE
(Comprehensive Assessment System for Built Environment Efficiency)
Japan


Source: CASBEE

Fig.3.4 Examples of Recognized Green/ Sustainable Building Certification

Chapter 04

# Parking & Vehicular Access

# 4.1 Introduction

4.1.1 Objectives of the Parking & Vehicular Access Guidelines are as follow:

- To create consistent and attractive street and park edges.
- To minimize the visual impact of parking and loading/ unloading space on the streetscape
- To integrate parking areas within the landscape for more visually appealing at grade parking areas
- To provide future-proof car parking provisions & incentives to be a 'Car-Lite City'

# 4.2 Parking

4.2.1 All required car parking lots are to be provided within the plot boundary to ensure the smooth flow of vehicles along adjacent roads.

4.2.2 Car parking spaces are encouraged to be located:

- Underground
- Above the second floor
- Surrounded by buildings

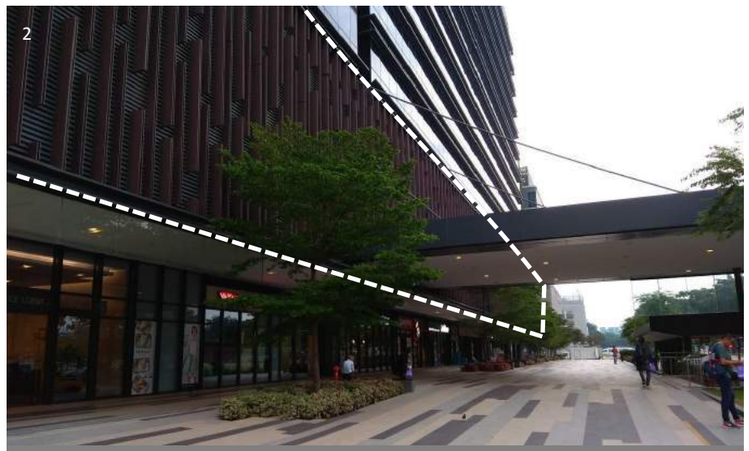
### 4.2.3 Car Parking Design

- To maintain an attractive streetscape, any at grade or above grade car park and loading/ unloading bays are to be fully integrated within the overall building form, and visually screened from above and on all sides.
- At grade car parking areas are encouraged to have semi-permeable surface and provide adequate drainage.

### 4.2.4 Parking and Loading Space Provision

All developments shall comply with the required car parking and loading space requirements in the Building Code of Philippines (Rule XIX).


Underground Car Park




Car Park above the second floor


Car Park Surrounded by Buildings

Fig. 4.1 Types of Car Parking Facilities


Green façade along the multiple storey car park


Green façade along the multiple storey car park


Semi-Permeable Car Park Ground

Fig. 4.2 Design of Car Parking Facilities

Sources: (1) MaxTracker; (2) Paya Lebar Squre; (3) Wikimedia Commons; (4) SJ; (5) Greenscreen; (6) Specification Product Update Blog

# 4.2 Parking

### 4.2.5 Parking Incentives

A reduction of up to 10% in car parking standards may be permitted by the Declarant for office, retail, F&B, Hotel, Private condominiums and apartments if:

- The development is within 300m radius of a Rail, LRT or BRT Station; and

A reduction of up to 5% in car parking standards may be permitted by the Declarant for office, retail, F&B, Hotel, Private condominiums and apartments if:

- An automated vehicle station, shared car or bike station, or any other smart mobility solution is integrated within the development to contribute to a Car-Lite City.

This will enable locators to better match parking provision with their assessment of demand based on operational and business considerations.

Other reduction in car parking standards may be considered by the Declarant if it can be clearly demonstrated, through detailed traffic impact and car parking study, that a relaxation in the standards of provision is beneficial.

4.2.6 District Parking structures, with combined parking requirements for multiple buildings and lots are allowed within a 200m radius of such buildings and lots.

**Example**

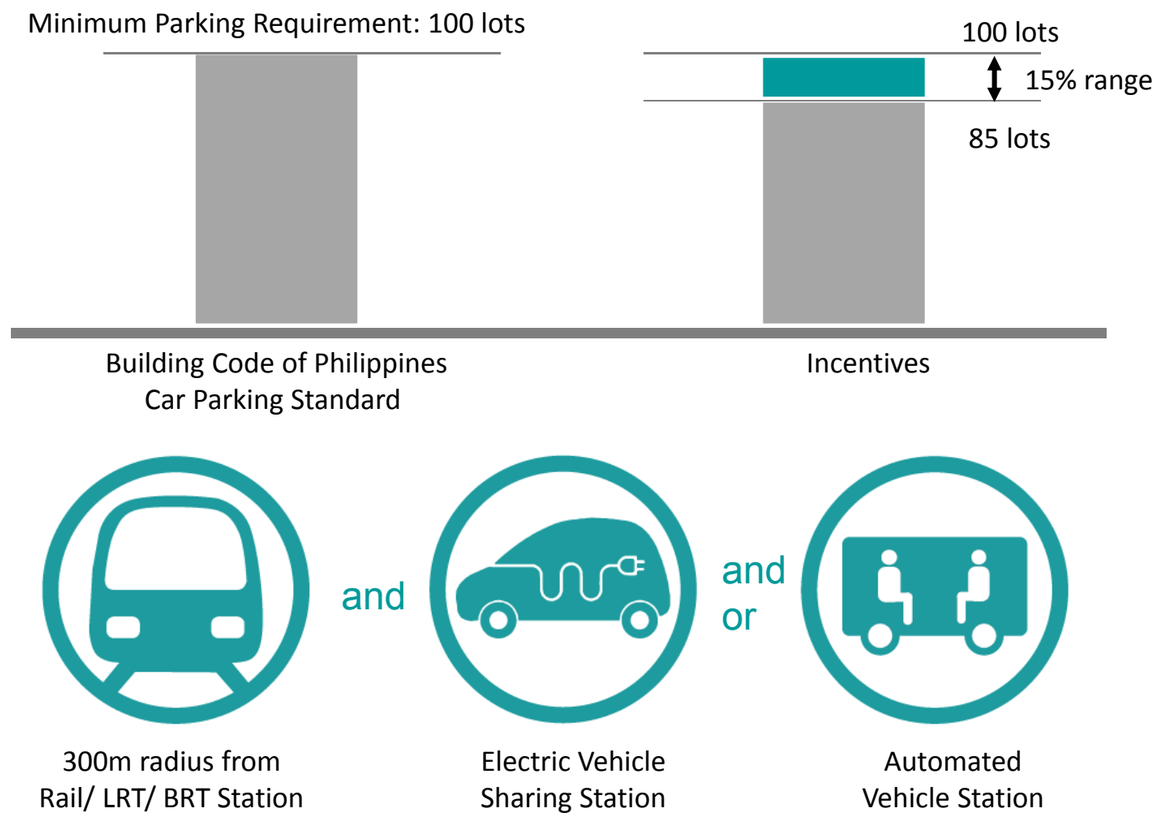



Fig. 4.3 Example of Parking Incentives

**Example**

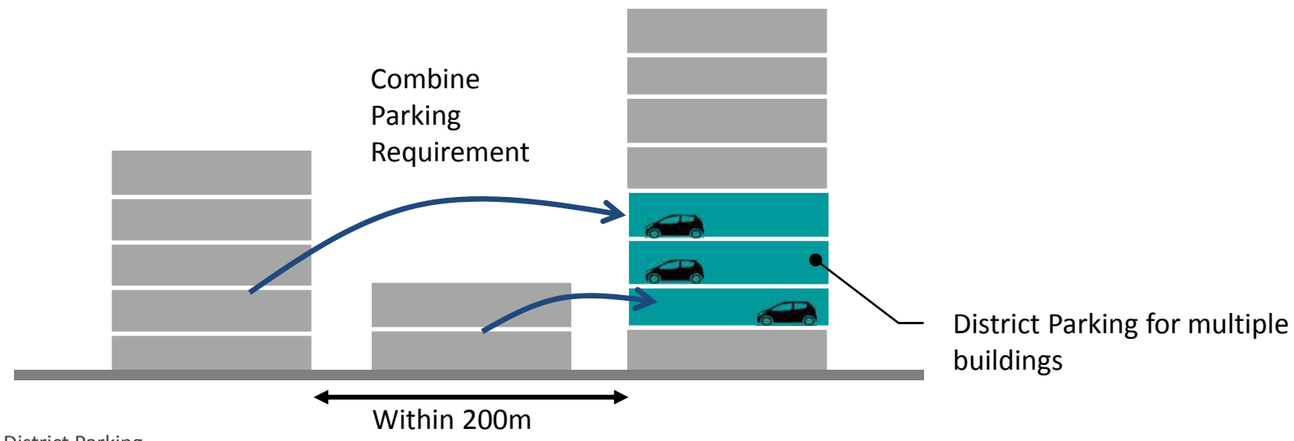



Fig. 4.4 Example of District Parking

# 4.3 Loading & Unloading

4.3.1 All loading and unloading requirements are to be provided within the plot boundary.

4.3.2 Where possible, loading/ unloading spaces shall be accommodated inside the building or underground. Otherwise, it shall be visually screened from all sides.

4.3.3 For Commercial use, except hotels, the point of access for loading/ unloading activities shall not interrupt any main shopping frontage.

The maneuvering of lorries shall be within the lot except where access is onto a vehicular service lane.

4.3.4 For Hotel/ Other use, loading/ unloading bays shall be located close to the service entrance.

Loading/ Unloading Area

Fig. 4.5 Loading/ Unloading Bay

# 4.4 Vehicular Access

4.4.1 Vehicular access from the public street to the plot leading to service areas, car parking areas, and passenger drop-off and pick-up points, etc., are to be provided by the Locator.

4.4.2 Curb cuts for vehicular access must be no greater than 7 meters wide for residential developments, and 9 meters wide for all other developments.

4.4.3 In determining location of an access point, consideration shall be given to the following:

- Access points are to be located at least 12 meters away from bus stops/ bay, taxi bays, pedestrian crossings, property line corner and other access points to the plot and neighboring plots.

- The Locator may provide more than one access points, if it can be demonstrated that the number of access points is technically reasonable based on the actual need of the development, subject to the approval of the Declarant.

- Provision of access points on top of utility services is strongly discouraged and require permission from the Declarant. In unavoidable cases, the Locator must install removable pavers above the utility services to allow for maintenance works.

- Disruption to street infrastructure, facilities and furniture, such as street lights, on-street parking, benches, planting, and pavement, etc., is strongly discouraged and require permission from the Declarant. In unavoidable cases, modification works and reinstatement of affected items shall be appropriately carried out by the Locator.

- All service access, including to refuse bin centers, and loading/ unloading bays, etc., shall be provided within the plot boundary. Separate access directly from the public street is prohibited.

4.4.4 Emergency Vehicular Access (EVA)

- EVA is allowed within the building setback area and shall not be overlapped by outdoor refreshment areas.

- EVA shall be provided within 18 meters direct sight from the breeching inlet.

- The width of an EVA shall not be less than 6 meters and must be kept clear at all times.

- Any overhead structure above any part of an EVA must maintain minimum height clearance of no less than 4.5 meters.

4.4.5 All other safety requirements related to vehicular access shall be provided in accordance with the National Building Code.

# 4.5 Vehicular Service Lane

4.5.1 A vehicular service lane is required for plots containing commercial uses so as to remove the need for any on-street servicing, and shall be accommodated within the plot boundary. The vehicular service lane may be shared between two adjacent plots, with a width of 3.5 meters on each side of the two adjacent plots. The lane may be covered on top, subject to agreement being reached between the Locators of the two plots and the Declarant. shall there be any overhead structure above the service lane, a minimum height clearance of 4.5 meters is required.

4.5.2 Where adjacent lots have been amalgamated, the vehicular service lane may, upon approval of the Declarant, be re-aligned or replaced with other means of vehicular service access. shall amalgamated parcels be re-sold and sub-divided again, the original requirements, as stated in this chapter, must be reinstated.

4.5.3 The lot shall enjoy a right of way for vehicular service lanes over adjacent lots, to permit free and unrestricted access 24 hours a day and shall be exclusively for private and service vehicles servicing and accessing the subject lots.

4.5.4 The vehicular service lane in each particular plot will be constructed at the cost of the individual Locator. The repair and maintenance of vehicular service lanes will be shared pro rata by the Locator and the adjacent Locator enjoying the right of way over the vehicular service lanes mentioned. In case of failure of the Locator to contribute to the maintenance of the vehicular service lane, the other Locator may advance the share of the defaulting Locator, subject to the right of reimbursement and/ or damages for any and all amounts advanced.

# 4.6 Service Vehicle Parking

4.6.1 Space for maneuvering, parking and loading of refuse collection vehicle or any other service vehicles shall be provided inside the building or underground, where possible. If provided on the ground floor, it shall be visually screened on all sides.

4.6.2 The space provided shall be designed to allow vehicles to enter and leave the lot without reverse movement. Exceptions to this provision must be with the prior written approval of the Declarant.

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Chapter 05

# Pedestrian System

# 5.1 Introduction

5.1.1 Objectives of the Pedestrian System Guidelines are as follow:

- To create a pedestrian-friendly district with a comprehensive network of pedestrian walkways, arcades, covered walkways, elevated pedestrian links (EPLs), through-block links and underground pedestrian links (UPLs)

- To allow people to move easily and comfortably. Permeability at the ground level is important in larger scale developments to allow pedestrians to walk through buildings. Accessibility and continuity of a pedestrian system is important to establish a well-connected neighborhood. Pedestrian and cyclist safety, convenience and comfort shall be foremost in the planning and design of the pedestrian and Non-Motorized Transport (NMT) route

5.1.2 Developments within NCC are encouraged to adopt an integrated pedestrian network that accommodates pedestrian circulation on and between three levels:

- Above grade – Elevated pedestrian link (EPL)
- At grade – Through-block link, walkway and arcade
- Below grade – Underground pedestrian link (UPL)

# 5.2 General Guidelines

### 5.2.1 Pedestrian and Non-Motorized Transport Network

The pedestrian and Non-Motorized Transport (NMT) Network on all levels shall have minimum interruptions and obstructions to allow seamless pedestrian movement.

### 5.2.2 Universal Design

The pedestrian network on all levels shall be designed for universal access. GFA exemption is eligible for public spaces, arcades, through-block links, EPLs, and UPLs that are developed according to the principles of universal assess, subject to approval of the Declarant.

### 5.2.3 Active Street Edge along Pedestrian Routes

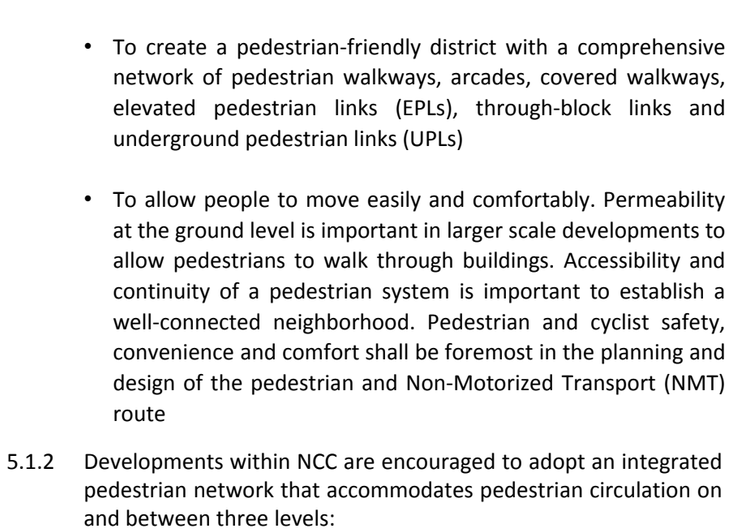
Activity Generating Uses (AGUs), such as retail, F&B, entertainment, and other similar uses shall be provided at the ground level fronting key pedestrian thoroughfares and public green open spaces, such as the River Park and Central Park, to encourage walkability and active vibrant streets.

### 5.2.4 Façade

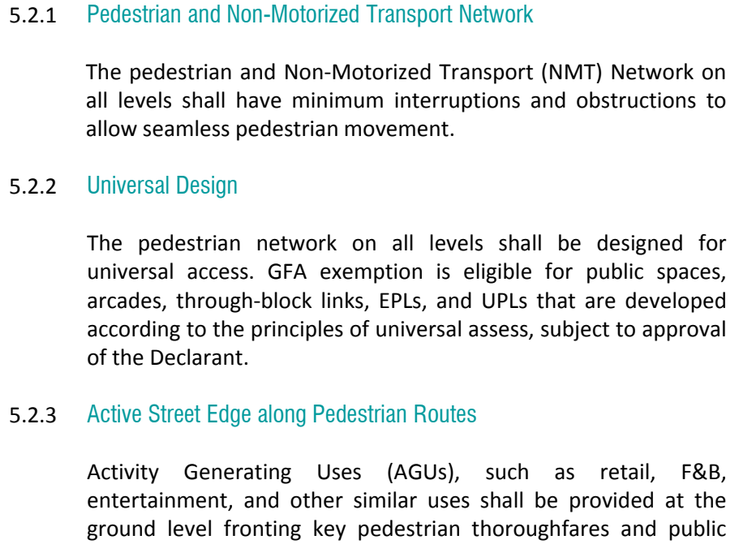
Storefronts along major pedestrian networks shall be designed with at least 60% of transparency, with multiple entrances into the building at the ground level to achieve an active street front.
If a façade extends along a side walk, no more than 40% of its length or 15m, whichever is less, is blank (without doors or windows).

### 5.2.5 Material

Covered and open walkways shall be paved with materials in line with the urban landscape theme of the district.




1 Universal design



2 Activity generating uses

Fig. 5.1 General Guidelines


3 Shopfronts with high level of transparency

1 Covered walkway in a residential area

1 Covered walkway in a commercial area

Sources: (1) SJ; (2) Joanne Levesque (Moment Mobile/Getty Images); (3) Meritus Hotels

# 5.3 Above Grade Linkage

## 5.3.1 Elevated Pedestrian Links (EPLs)

- An EPL is a covered pedestrian passageway located above grade that forms part of the pedestrian circulation network.
- EPLs are encouraged to link developments or BRT/ LRT and rail stations to adjacent developments at the podium level. Where possible, the EPL must be integrated into the internal circulation system of the individual developments into which it links. This is to create a convenient and functional pedestrian circulation network throughout NCC.
- EPLs shall complement at grade pedestrian networks and connect commercial developments across major arterial roads, especially across LRT/ BRT routes.
- Development locations that are encouraged to provide for and link into an EPL/ UPL system are indicated in the EPL and UPL Plan (Figure 5.2).
- EPLs shall include vertical pedestrian circulation points within the building envelope to connect to the walkway at the ground floor. Each vertical circulation point must include staircases and a passenger lift. Provision of two-way escalators is encouraged. The entire EPL and the associated vertical circulation points are to be kept open for public access 24 hours a day, unless otherwise specified. Where possible, EPLs shall also link into UPLs.

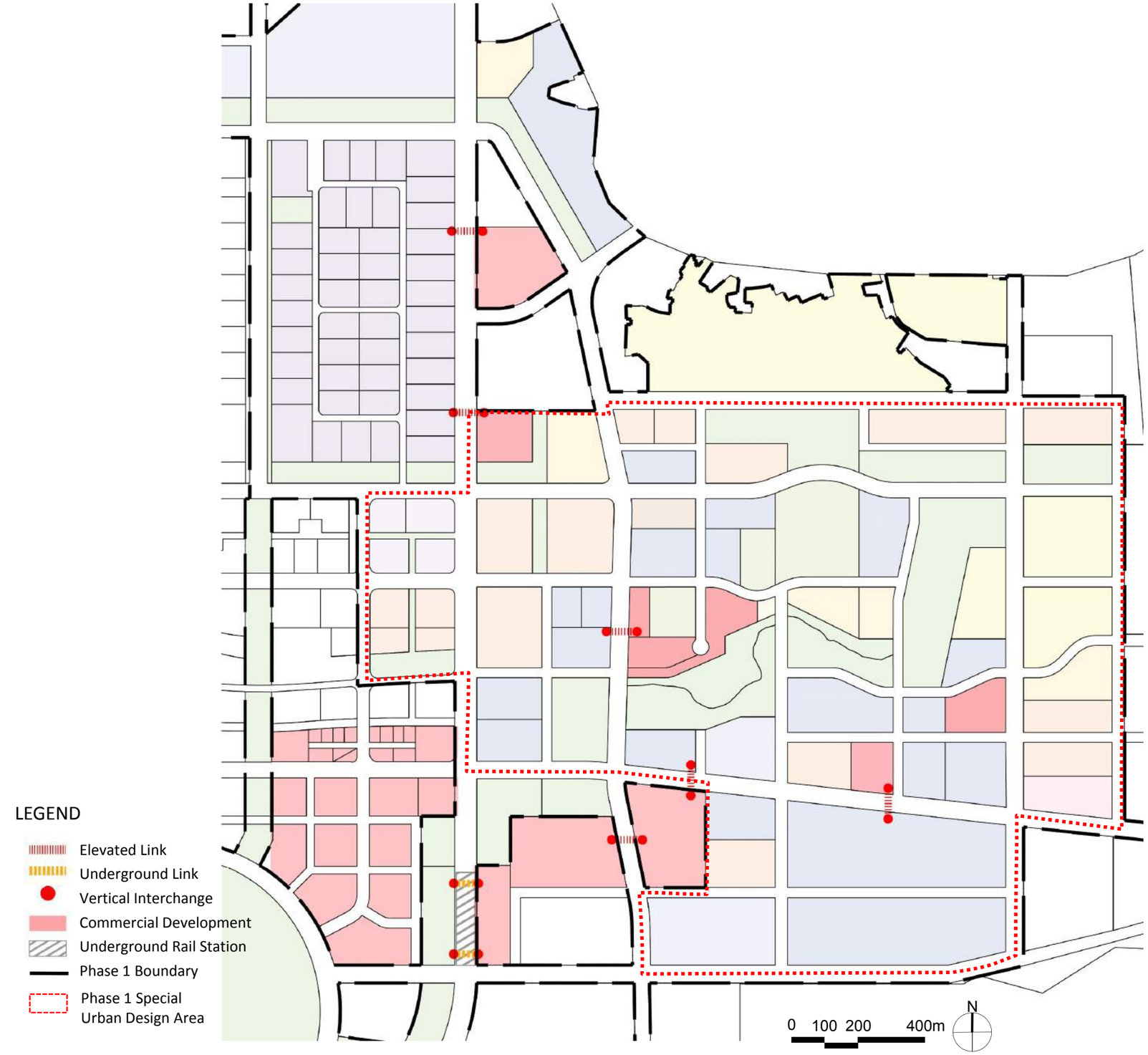



Fig. 5.2 EPL and UPL Plan

# 5.3 Above Grade Linkage

- Any commercial activities within/ on EPLs shall require the prior written approval of the Declarant.
- Adjoining Locators are encouraged to coordinate their plans so that the connection point is mutually agreeable. In case of conflict, the parties shall submit the issue for the Declarant's resolution.
- An EPL shall be funded, constructed and maintained pro rata by the adjoining Locators.
- The design of the EPL must be compatible with the overall character of the neighborhood in which it is located and with the architectural treatment of the building(s) that they form part of and/ or connect into. The design of the EPL must comply with the following guidelines:

| | |
|---|---|
| Width | 3.0 meters minimum interior clearance |
| Height | 3.5 meters minimum interior height |
| Clearance | Minimum height clearance from the street surface to the bottom of the EPL is subject to the Filipino Design Standard (DPWH)'s Bridge Vertical Clearance Guidelines |
| Cover | The entire system of EPL shall be covered overhead |
| Lighting | Lighting shall be provided throughout the entire EPL, in accordance to chapter 6 |

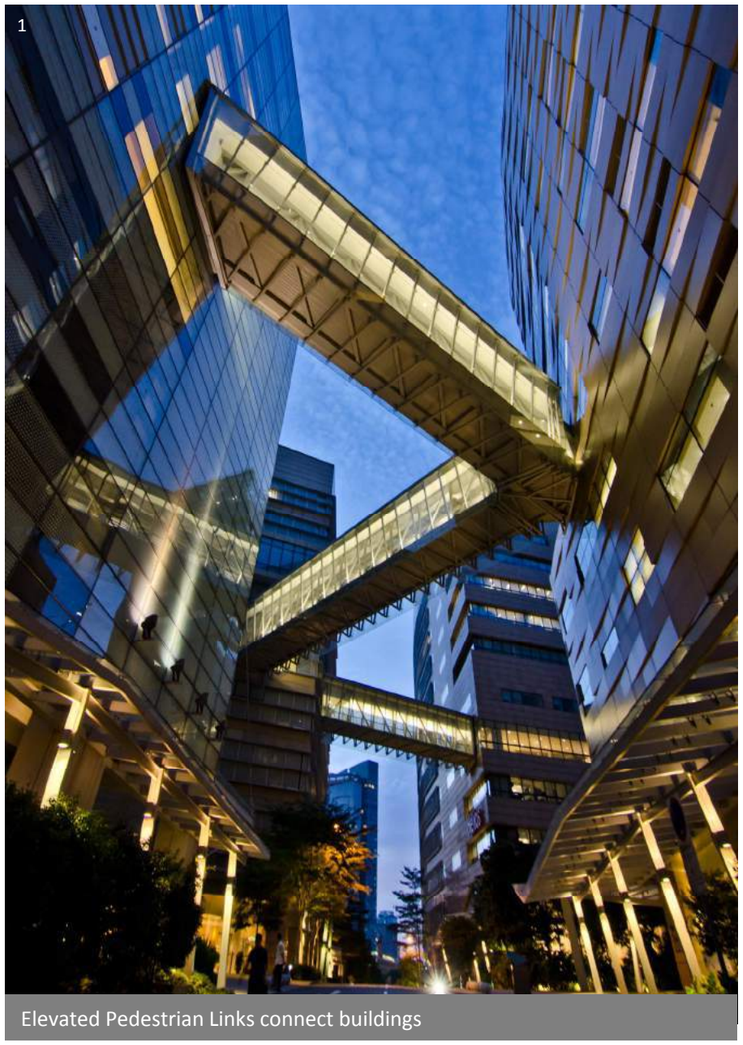




Fig. 5.3 Examples of Elevated Pedestrian Links Sources: (1) One North; (2) Amy Lam

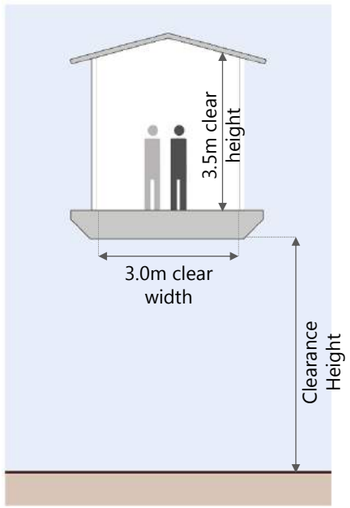



Fig. 5.4 Section of Elevated Pedestrian Link

# 5.4 At Grade Linkage

## 5.4.1 Through-Block Link

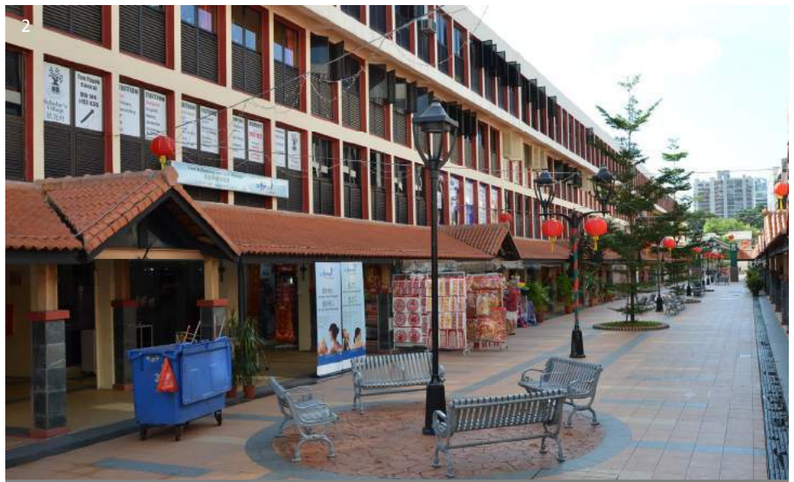
- Through-block Link are linkages running through a block that allow pedestrians to move directly through large building blocks so as to improve ground floor permeability and pedestrian connectivity.
- Through-block links shall be provided to link different buildings and uses to neighboring parks and open spaces, such as River Park.
- Through-block links shall also connect to proposed LRT/ BRT stations.
- Development locations that are required to provide for a through-block link are indicated in the At Grade Linkage Plan (Figure 5.5).
- Art works or display windows shall be featured along building facades fronting through-block links to heighten the sense of place, and to add interest and variety to the pedestrian experience.
- The design of the through-block links must comply with the following guidelines:

| | |
|---|---|
| Width | 6.0 meters minimum interior clearance, unless otherwise specified. Laneways shall not be obstructed by parking or other service mechanical units |
| Height | 10.0 meters minimum interior height |
| Cover | Through-block links may be open to the sky or covered |
| Lighting | Skylight or lighting shall be provided throughout the entire though-block link, shall it be enclosed |

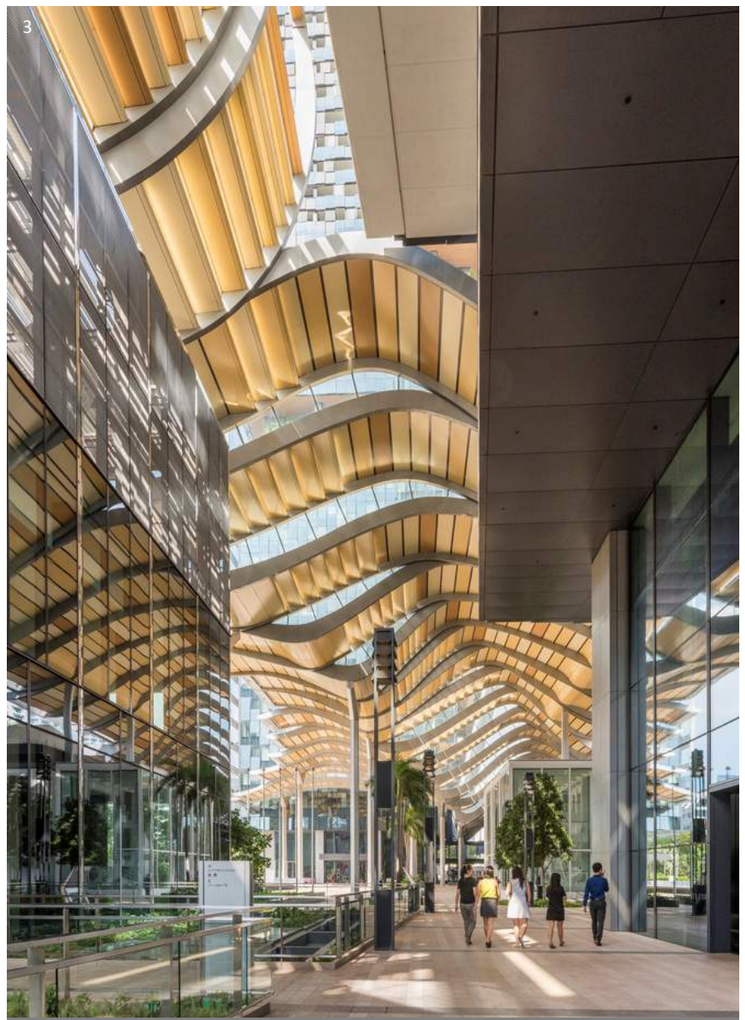

Fig. 5.5 At Grade Linkage Plan

# 5.4 At Grade Linkage


Through-Block Link (Indoors)




Through-Block Link (Open to sky)




Through-Block Link (Covered)

Fig. 5.6 Examples of Through Block Links Sources: (1) Wikimedia Commons; (2) SJ; (3) Nigel Young

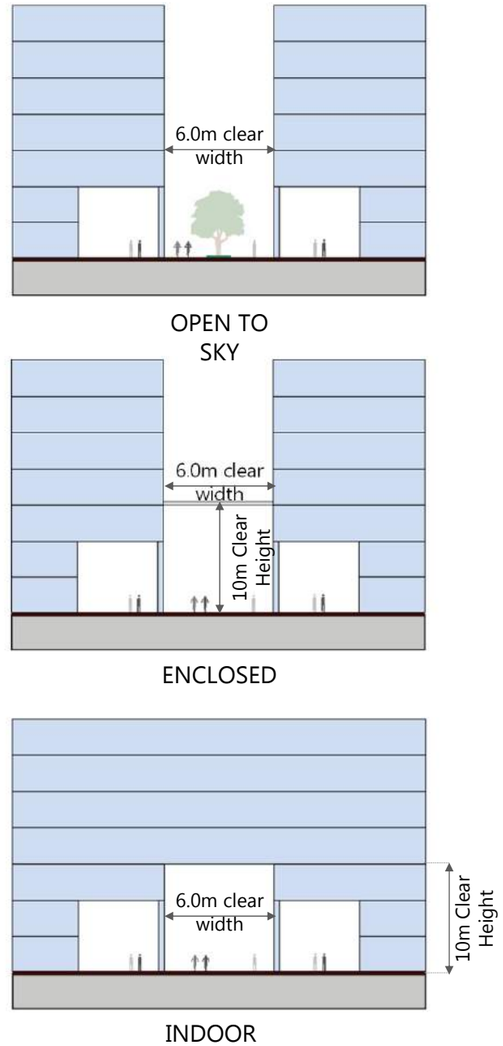



Fig. 5.7 Sections of Through-Block Links

# 5.4 At Grade Linkage

## 5.4.2 Arcade

- An arcade is a ground level covered pedestrian way that runs parallel to and in between buildings/ storefronts and the property lines.

- All developments are encouraged to provide arcades. Development locations that are required to provide for and link into an arcade system are indicated in Figure 5.8.

- Arcades must be provided at the ground level and shall link continuously into the arcade of an adjacent development as they are intended to ensure adequate weather protection to pedestrians during inclement weather.

- Along major arterial roads, where build-to-line is required as indicated in the Build-to-Line Plan (Figure 2.18), the arcade is to abut at the inner edge of the minimum setback line. Along the other streets, the arcade may be setback from the Road Reserve line following the articulation of the building form. When a building is required to build to the setback line but will not be able to comply due to its small building footprint relative to the overall size of the plot, the Locator shall submit a request for such deviation and seek the approval of the Declarant, subject to conditions that may be imposed on the Locator.

- An arcade shall be funded, constructed and maintained by the Locator of the site.

- No commercial activity is allowed within the arcade zone unless approved by the Declarant. Retail activity and display windows are encouraged at areas fronting arcade zones to add interest to the pedestrian experience.


Fig. 5.8 Arcade, Canopy and Covered Walkway Plan

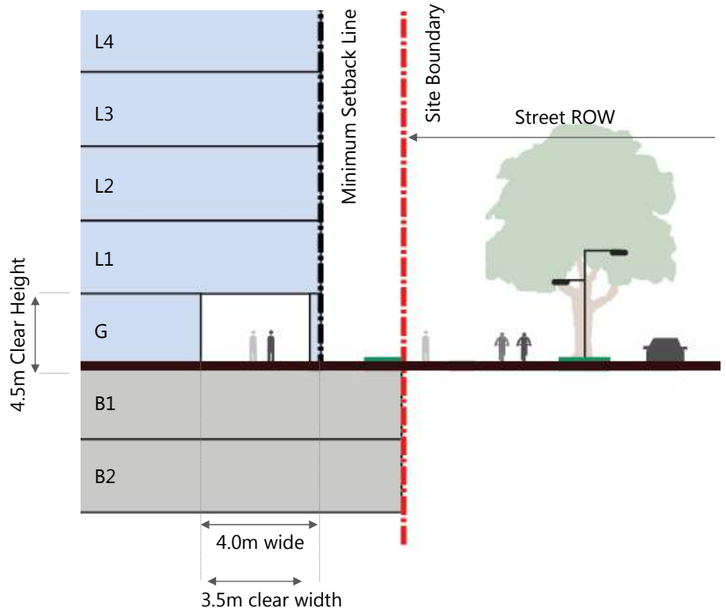
# 5.4 At Grade Linkage

- An arcade shall be solely used for the purpose of pedestrian movement, unless approved by the Declarant.
- The design of the arcade must be compatible with the character of the building which it forms part and of the neighborhood in which it is located. The design of the arcade must comply with the following guidelines:

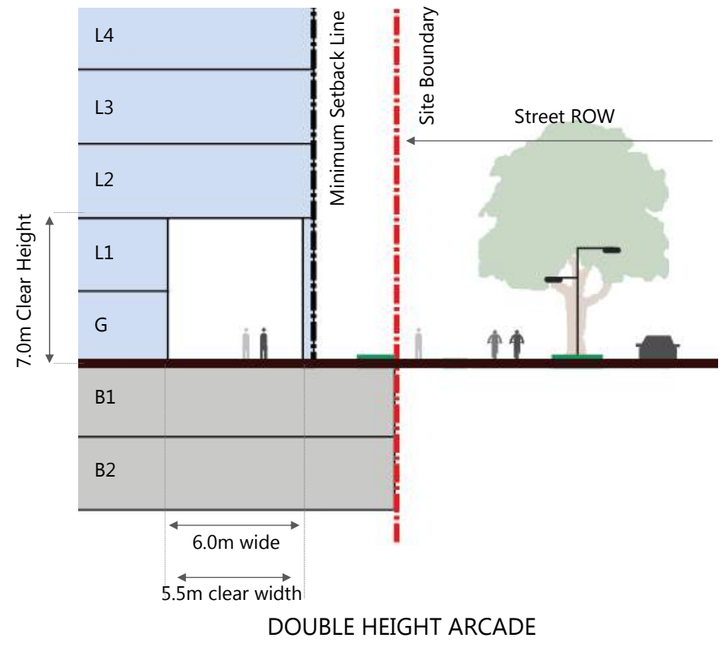
| | |
|---|---|
| Width | For single height arcade, 4.0 meters minimum interior clearance; 3.5 meters minimum continuous clear zone, free of columns and other obstruction, unless otherwise specified<br><br>For double height arcade, 6.0 meters minimum interior clearance; 5.5 meters minimum continuous clear zone, unless otherwise specified |
| Height | Interior height of the arcade must match with at least that of the ground floor of the building into which it links. The minimum interior height to the base of the ceiling is 4.5 meters for single height arcade and 7.0 meters for a double height arcade |
| Cover | Arcades must be continuously covered overhead; minimum distance between columns on the street side shall be 4.5 meters. Vertical clearance for such openings shall be 4.0 meters |
| Lighting | Lighting shall be provided throughout the entire arcade, in accordance to Chapter 6 |



Fig. 5.9 Examples of Arcades




SINGLE HEIGHT ARCADE




DOUBLE HEIGHT ARCADE

Fig. 5.10 Section of Arcades

Sources: (1) Nora Davis; (2) GMP Architekten

# 5.4 At Grade Linkage

## 5.4.3 Pedestrian and Non-Motorized Transport Passageways

- All developments shall include designated off-road multi-use paths/ sidewalks at the ground level, which may include pedestrian walkways, jogging trail, open passageways and clearly marked bicycle lanes.

- Public green open spaces shall provide pedestrian and non-motorized transport (NMT) routes for easy movement and connection.

- All passageways shall be accommodated within the plot boundary.

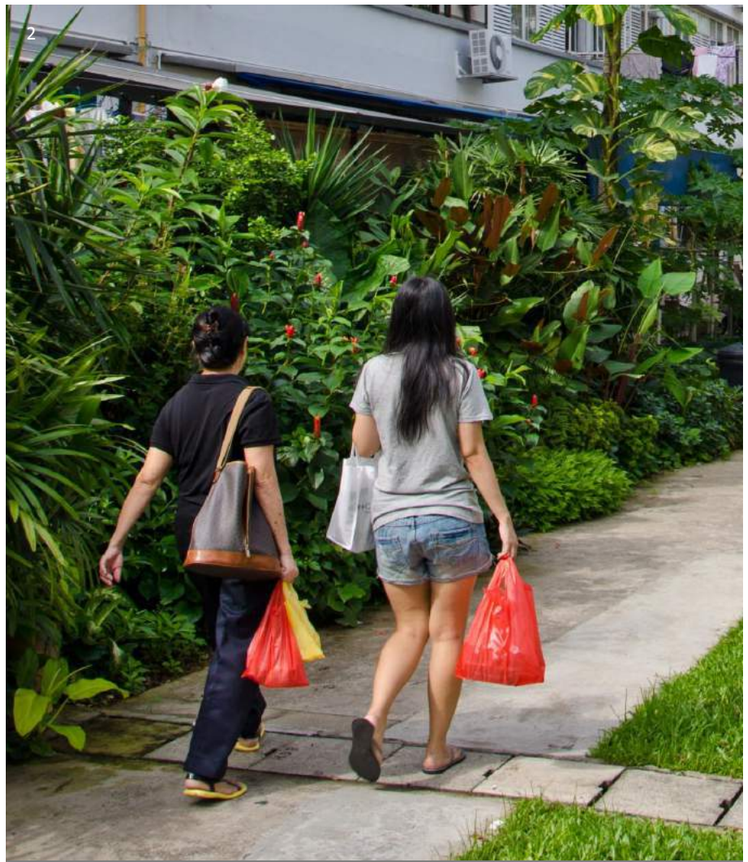
- The passageway may be constructed as an open or covered passageway. Covered passageways must comply with guidelines detailed in Chapter 5.4.4.

- Development locations that are required to provide for a public easement are indicated in the At Grade Linkage Plan (Figure 5.8).

- The design of all passageways must comply with the following guidelines:

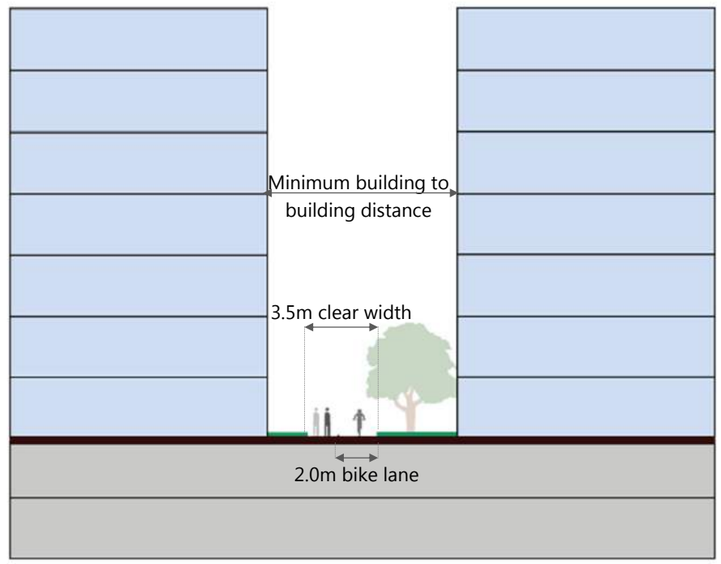
| | |
|---|---|
| Width | 3.5 meters minimum interior clearance, including a minimum 2.0 meters bicycle lane |
| Height | 3.5 meters minimum interior height for a covered passageway, if provided |
| Cover | Passageways may be open or covered |
| Lighting | Lighting shall be provided along passageways to illuminate the area, in accordance to Chapter 6 |


Clearly marked Pedestrian and NMT Lane




Pedestrian Walkway through Residential area

Fig. 5.11 Examples of open passageways




WITHIN DEVELOPMENT LOT

Fig. 5.12 Section of open passageway

Source: (1) & (2): SJ

# 5.4 At Grade Linkage

## 5.4.4 Covered Walkways

- Covered walkways are covered linkages connecting adjacent buildings or across plots and property lines is classified. All developments are encouraged to provide covered walkways that link continuously to an adjacent development and/ or transit station to provide pedestrian refuge from sun and rain.

- Development locations that are required to provide and link into covered walkways are indicated in Arcade, Canopy and Covered Walkway Plan (Figure 5.8).

- Covered walkways shall be funded, constructed and maintained pro rata by the adjoining Locators.

- The design of the covered walkway must be compatible with the overall character of the neighborhood in which it is located and with the architectural treatment of the building(s) that they form part of and/ or connect into. The design of the covered walkway must comply with the following guidelines:

| | |
|---|---|
| Width | 4.0 meters minimum interior clearance; 3.5 meters minimum continuous clear zone, free of columns and other obstruction, unless otherwise specified |
| Height | 3.5 meters minimum interior height between the sidewalk and the lowest portion of the fascia |
| Cover | Covered walkways must be continuously covered overhead. They cannot be enclosed and must be accessible by the public |
| Lighting | Lighting shall be provided throughout the entire covered walkway, in accordance to Chapter 6 |

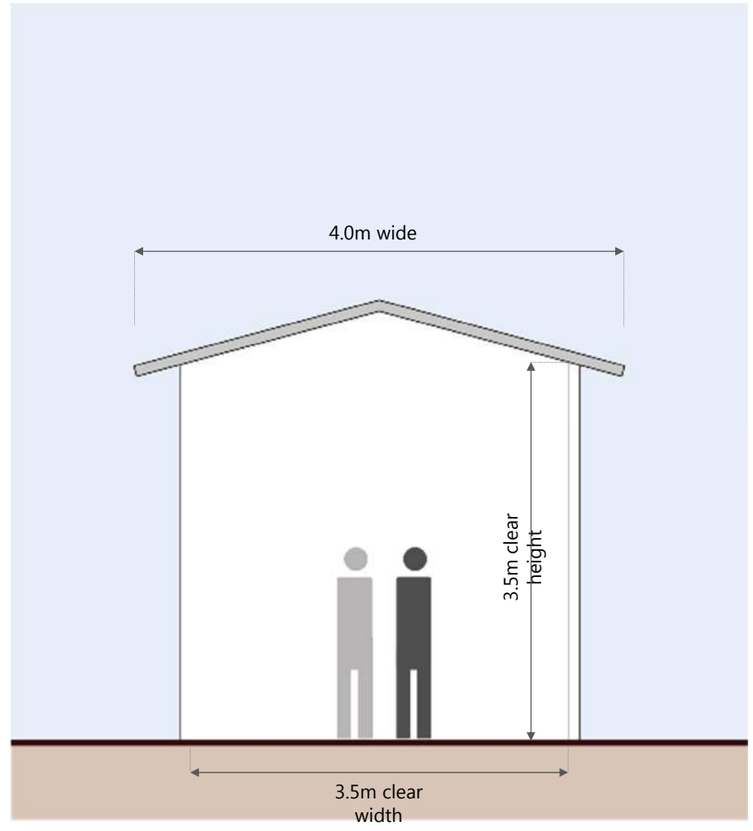

Covered Walkway linking to Transit Station


Covered Walkway linking Adjacent Buildings


Covered Walkway along Streets

Fig. 5.13 Examples of Covered Walkways


Covered Walkway across Plots




Note: Roof may be pitched, slanted or flat; Columns may be on one or both sides.

Fig. 5.14 Section of Covered Walkways

Sources: (1): Darren Soh (FARM); (2) National University of Singapore; (3) D Jules Gianakos

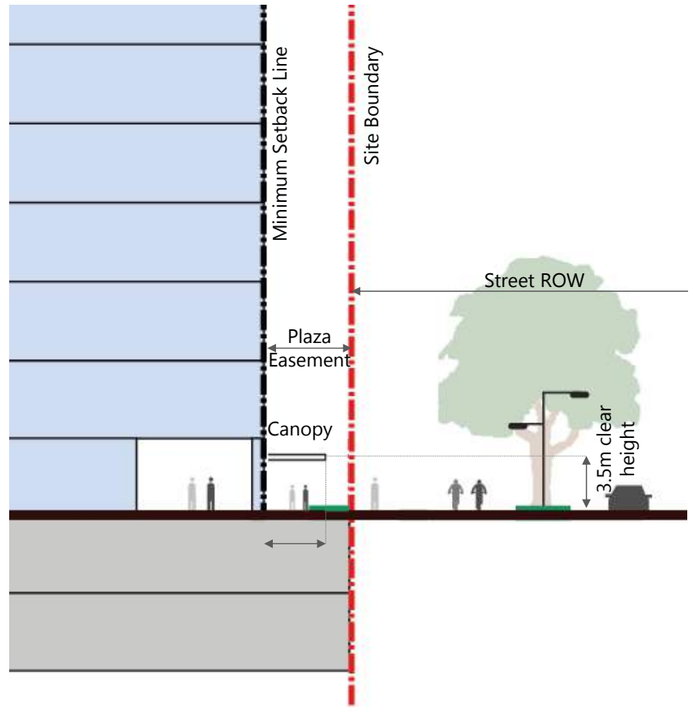
# 5.4 At Grade Linkage

## 5.4.5 Canopies

- In order to provide pedestrians a degree of protection from the elements, some pedestrian passageways and plazas shall be required to provide canopies or awnings for pedestrian use.
- Development locations that are required to provide canopies are indicated in Arcade, Canopy and Covered Walkway Plan (Figure 5.8).
- Awnings and canopies shall only cover storefronts, entrances and related openings.
- Awnings and canopies shall be funded, constructed and maintained at the cost of the Locator whose building it is attached.
- No commercial activity is allowed within the canopy zone unless approved by the Declarant. Retail activity and display windows are encouraged at areas fronting the canopy zone to add interest to the pedestrian experience.
- Awnings and canopies must be compatible with the main structural elements of the lower façade of the building which it forms a part of, as well as the overall design of the storefront. The design of awnings and canopies are subject to the approval of the Declarant and must comply with the following guidelines:

| | |
|---|---|
| Width | 3.5 meters minimum continuous horizontal clear zone; and overhang that is free of columns and other obstructions for canopies |
| Height | 3.5 meters minimum interior height between the sidewalk and the lowest portion of the fascia |
| Cover | Awnings and canopies cannot be enclosed and must be accessible by the general public |
| Lighting | Lighting shall be provided along canopies, in accordance to Chapter 6 |
| Awnings and canopies shall not encroach closer than 1.0 meter from a light post or street tree | |
| Awnings and canopies shall be cantilevered and anchored to the main structure or development project on the saleable lot | |


Fig. 5.15 Examples of Awnings and Canopies




PLAZA EASEMENT

Fig. 5.16 Section of Awnings and Canopies

Sources: (1): SJ; (2) Cell Code; (3) Theomoda

# 5.5 Below Grade Linkage

## 5.5.1 Underground Pedestrian Link (UPL)

- An Underground Pedestrian Link (UPL) is a subterranean connection for pedestrians that links developments, not restricted to any specific level of basement.

- UPLs are encouraged to link developments to the underground rail station. Development locations that are required to provide for and link into a UPL system are indicated in the EPL and UPL Plan (Figure 5.2).

- UPLs shall include sufficient vertical pedestrian circulation points within the building envelope to connect to the pedestrian circulation on the ground floor. Each vertical circulation point must include staircases and a passenger lift. Provision of two-way escalators is encouraged. The entire UPL and the associated vertical circulation points are to be kept open for public access 24 hours a day, unless otherwise specified. Where possible, UPLs shall also link into EPLs.

- Where there are underground utility services, UPL must cross under the utility services with minimum 1.0 meter spacing between the base slab of utility services and roof of UPL. The UPL construction drawings will be subject to approval after thorough cross-check with utility services network.

- Art work and display windows are encouraged along UPLs to create interest along the route, subject to approval of the Declarant.

- The architectural treatment of UPLs must be compatible with the character of the development in which it is part of. The design of UPLs must comply with the following guidelines:

| | |
|---|---|
| Width | 6.0 meters minimum interior clearance |
| Height | 3.5 meters minimum interior height |
| Lighting | Lighting shall be provided throughout the entire UPL, in accordance to Chapter 6 |
| Ventilation | Adequate ventilation must be provided |
| Signage | Clear signage indicating exits and the names or locations of where those exits emerge shall be provided, in accordance to Chapter 7 |


UPL connecting to transit stations


UPL with shop displays and clear signage

Fig. 5.17 Examples of UPL


Art work and displays along UPL

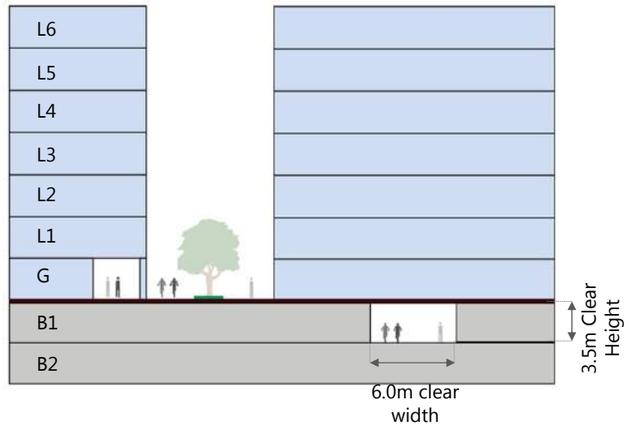



Fig. 5.18 Section of UPL

Sources: (1): The Smart Local; (2) Her World; (3) Wikimedia Commons

# 5.6 Vertical Circulation

5.6.1 Vertical pedestrian circulation points are essential connectors that link the different levels of the pedestrian system.

5.6.2 Developments with EPLs and/ or UPLs shall provide sufficient vertical circulation points that include staircases and a passenger lift. Provision of two-way escalators is also encouraged.

5.6.3 Vertical circulation points shall be accommodated within the plot boundary and must be within a 15-meter radius of the entry point of the EPL or UPL.

5.6.4 Where vertical circulation points are integrated in the EPL or UPL system, and open to the public 24 hours a day, the Locator may be eligible to a bonus GFA, at the sole discretion of the Declarant.

5.6.5 The design of vertical circulation points must comply with the following guidelines:

| | |
|---|---|
| Width | 1.5 meters minimum interior clearance |
| Material | Durable and slip resistant |
| Lighting | Lighting shall be provided to illuminate the vertical circulation areas, in accordance to Chapter 6 |
| Railings | Railings shall be provided |
| Landings | Each flight of stairs shall have a landing at both ends and shall not be less than the width of the approach stair |
| Operation | Escalators shall have the same operation time as the building in which they are located |

# 5.7 Management & Maintenance

5.7.1 All pedestrian circulation networks shall be maintained, repaired and cleaned by the respective Locator at his sole expense to the reasonable satisfaction of the Declarant.

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Chapter 06

# Lighting

# 6.1 Introduction

6.1.1 Objectives of the Lighting Guidelines are as follow:

- To promote safety and visibility, and create a safe urban environment for movement and recreation across public spaces, including parks, open spaces and pedestrian passageways
- To minimize light pollution throughout the city
- To enhance the architectural expression of developments and complement with surrounding developments

# 6.2 Building Façade Lighting

6.2.1 Landmark buildings or key buildings at major intersections shall be well lit including its podium façade, all sides of the tower and top of the tower.

6.2.2 The podium façade of the buildings facing parks, plazas and public open spaces shall be well lit on all sides.

6.2.3 Buildings are to turn on lighting from Friday to Sunday, during public holidays, and during national, city and district-wide events and festivals from 1900 to 2300 hours. Lighting is also encouraged on all other days.

6.2.4 Each district in NCC is to establish uniform and distinctive lighting standards to enhance their unique identity and achieve a harmonious and well-coordinated signature nightscape within each district. This may be done by highlighting the exterior facades of buildings to reinforce the unique physical characteristics and architecture of each district.

- ### Downtown

The lighting in the Downtown shall seek to achieve a unique, three-dimensional nightscape for the CBD that is reflective of the global identity of NCC. The technical guidelines are as follows:

| | |
|---|---|
| Illuminance (Lux) | No control on lux level but shall be executed sensitively to avoid glare, light trespass and light pollution |
| Color Temperature (Kelvin) | 4,500 to 6,000 |
| Color Rendition (Ra) | 70 |

- ### Civic Center

The vision for lighting in the Civic Center is one that is subtle and elegant to reinforce the district as a cultural and civic hub. The technical guidelines are as follows:

| | |
|---|---|
| Illuminance (Lux) | Minimum 50 |
| Color Temperature (Kelvin) | 3,000 to 6,500 |
| Color Rendition (Ra) | 85 |

- ### North Technopark & Clark Highlands

The vision for lighting in North Technopark & Clark Highlands is one that is contemporary to enhance the district's identity as a technological center.

| | |
|---|---|
| Illuminance (Lux) | No control on lux level but shall be executed sensitively to avoid glare, light trespass and light pollution |
| Color Temperature (Kelvin) | 3,500 to 6,000 |
| Color Rendition (Ra) | 70 |

- ### North Gate & South Gate

The vision for lighting in North Gate & South Gate is one that is refined and comfortable to maintain the amenity of residential district. The technical guidelines are as follows:

| | |
|---|---|
| Illuminance (Lux) | No control on lux level but shall be executed sensitively to avoid glare, light trespass and light pollution |
| Color Temperature (Kelvin) | 2,500 to 3,500 |
| Color Rendition (Ra) | 70 |

Downtown Lighting

Civic Center Lighting

North Technopark & Clark Highlands Lighting

North Gate & South Gate Lighting

Fig. 6.1 General Guidelines

Sources: (1): Wikimedia Commons; (2) Dista Dee; (3) Blau Journal; (4) SirHill17

# 6.3 Illumination

### 6.3.1 General

- Lighting shall not disturb the surrounding ecology.
- Lighting design shall maintain the amenity of residents and visitors. Lighting shall be indirect and executed sensitively to avoid glare, light trespass and light pollution.
- Illumination shall ensure uniform lighting throughout an area.

### 6.3.2 At Grade, Above Grade and Below Grade Passageways

- All at grade linkages, EPLs and UPLs are to be provided with a system of ceiling up-lighting for consistent appearance from lot to lot.
- Sources of illumination for ceiling up-lighting systems shall provide a color of light within the range of 2,500 degrees Kelvin and 3,500 degrees Kelvin.
- Illumination level on the floors of an EPL shall be a minimum of 75 lux, with an average-to-minimum uniformity ratio of 4-to-1.
- The design of light fixtures on exterior facades of the buildings facing pedestrian walkways and main streets shall be in-line with the overall theme of the urban district.

### 6.3.3 Arcade

- Building facades beneath an arcade are to be illuminated to a level of no less than 75 lux, with an average-to-minimum uniformity ratio of illumination of 5-to-1 or better. Color of lamps providing this illumination shall be between the range of 2,500 degrees Kelvin and 3,500 degrees Kelvin.
- Decorative ceiling or wall fixtures on exterior building walls beneath arcades shall be limited to locations flanking main building entries.
- All fixtures, except decorative ceiling or wall fixtures at main entrance, shall be deeply shielded to prevent visible fixture glare when viewed from the street or arcade on the opposite side of the street.

### 6.3.4 Fencing and Boundary Walls

- Fencing and boundary walls next to public open spaces are to be illuminated to a minimum of 75 lux, with an average-to-minimum uniformity ratio of 4-to-1 at night to encourage safe public environment within the entire city.

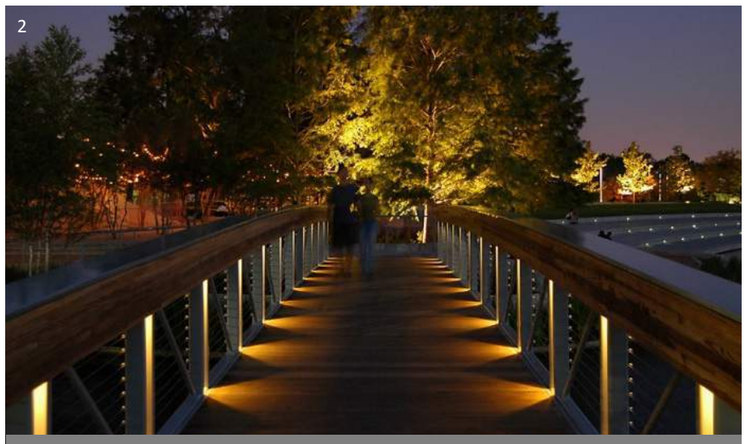
### 6.3.5 Exterior Art, Sculpture and Special Features

- Bridges, public art and sculptures and other landscape elements within parks shall be lit to create a rich visual experience within the park.
- Lighting equipment used to illuminate all items of art or sculpture visible to the public from streets, sidewalks, passageways, or open spaces shall be equipped with shielding devices, as necessary, to shield viewers from glare generated by fixture lamps.

### 6.3.6 Public Open Spaces

- Public open spaces are to be illuminated between sunset time and sunrise time to promote safety and visibility.

1 Illuminated pedestrian link



2 Illuminated park network

3 Illuminated street furniture

Fig. 6.2 Illumination

Sources: (1): One North; (2) Lam Partners; (3) Metalco

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Chapter 07

# Signage

# 7.1 Introduction

7.1.1 Objectives of the Signage Guidelines are as follow:

- To establish identity and marketing of businesses in NCC
- To establish coordinated, distinctive and aesthetically sound graphic criteria for signs that complement and enhance the architecture and urban character of NCC
- To enhance the character, scale, architectural quality and appearance of a building, site and landscape setting
- To maximize the effectiveness of signage by minimizing and consolidating signage to avoid visual clutter
- To design a comprehensive system of signage to include infrastructure, information, way finding and orientation signage, and transit signage

7.1.2 The Declarant has designed and is responsible for implementing a comprehensive system of signage which includes infrastructure, information, orientation signage and transit signage. This system also addresses the design, use and implementation of temporary signs.

7.1.3 All signs and graphics which occur on individual properties and parcels must conform to the Design Standards and Guidelines as detailed in this chapter.

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7.1.4 The Declarant reserves the right to remove any and all such signs that do not comply with the restrictions detailed in this chapter.

7.1.5 All advertising signs, including temporary signs, are strictly prohibited, except as allowed in the Design Standards and Guidelines or with the prior written approval of the Declarant. No signs are permitted on a building, structure or street except as provided for under this chapter or as approved by the Declarant.

# 7.2 Sign Types

## 7.2.1 Building Signage

- Building Signage is an identification sign limited to the building logo and/ or name, or the logo and/ or name of the principal tenant or other organization as contracted by the building owner.
- Roof mounted signs, advertisement signs, string lights and signs with excessively bright lights are prohibited on a building or plot.
- Building signage shall complement the architectural design, form and scale of the host building or plot.
- Building signage shall not obscure a building's architectural form, features or glazed surface.
- Excessive or repetitive advertising on a building or site shall be prohibited.
- Building signage shall not protrude above the height of rooflines, beyond fascia, parapets or walls of the host building.
- Design Criteria - Free-standing

| | |
|---|---|
| Quantity | One per building on address street, except streets having two frontages, in which case one sign per frontage is permitted |
| Location | Signs shall be located within the lot where the business operates, a minimum 15 meters from a street corner, and may be placed in the landscape area |
| Size | Face of the sign shall not exceed 10.0 square meters; maximum height of 2.0 meters; and maximum thickness of 0.5 meters |
| Illumination | If illuminated, halo Illuminated, internally illuminated box letters, or exterior illuminated |
| Material/ Color | Colors and materials used shall complement the architecture of the host building |

- Design Criteria – Street Wall

| | |
|---|---|
| Quantity | One per façade fronting on a public access |
| Location | Signs shall be located on the fencing wall or podium façade along the plot frontage |
| Size | Face of the sign shall not exceed a maximum height of 1.0 meters and 20% of the length of the building façade |
| Illumination | If illuminated, halo Illuminated, internally illuminated box letters, or exterior illuminated |
| Material/ Color | Colors and materials used shall complement the architecture of the host building |


Building Signage – Street Wall

Building Signage – Frontage

Building Signage – Free-Standing

Fig. 7.1 Building Signage

Sources: (1): Sansiri; (2) Powen Group; (3) Capital Sign Solutions

# 7.2 Sign Types

### 7.2.2 Building Entrance Signage

- Building entrance signage is an identification sign limited to the building name or building address and street name.
- Design Criteria

| | |
|---|---|
| Quantity | One per building on address street, except streets having two frontages, in which case one sign per frontage is permitted |
| Location | Signs shall be positioned over main entry doors or applied to architectural elements near main doors, and located within the plot |
| Size | Face of the sign shall not exceed 4.0 square meters; maximum height of 0.5 meters; projection beyond the property line is not permitted |
| Illumination | Non-illuminated |
| Material/ Color | Colors and materials used shall complement the architecture of the host building |

### 7.2.3 Retail Tenant Signage

- Retail tenant signage is an identification sign limited to the tenant logo, name and address.
- Design Criteria

| | |
|---|---|
| Quantity | One per tenant, except where tenant space fronts on two street, in which case one sign per frontage is permitted |
| Location | Signs shall be applied to building fascia panel |
| Size | Sign may extend the entire width of the storefront; maximum height of 1.0 meter |
| Illumination | If illuminated, halo Illuminated, internally illuminated box letters, or exterior illuminated |
| Material/ Color | Colors and materials used shall complement the architecture of the host building |

### 7.2.4 Advertising Signage

- Advertising signage include temporary marketing and advertising signage in the form of free-standing or wall mounted display panels.
- Advertising signage shall be aesthetically uniform with designs that are in line with the theme and appearance of surrounding developments.
- Advertisements on electric billboards and digital screens will be considered only at locations where the display of such digital screens would not adversely affect the amenity of the nearby residents or create visual clutter along the streetscape.
- Design Criteria

| | |
|---|---|
| Quantity | As may be approved by the Declarant |
| Location | As may be approved by the Declarant |
| Size | As may be approved by the Declarant |
| Illumination | Internally illuminated or externally illuminated |
| Material/ Color | Colors and materials used shall complement the architecture of the host building |

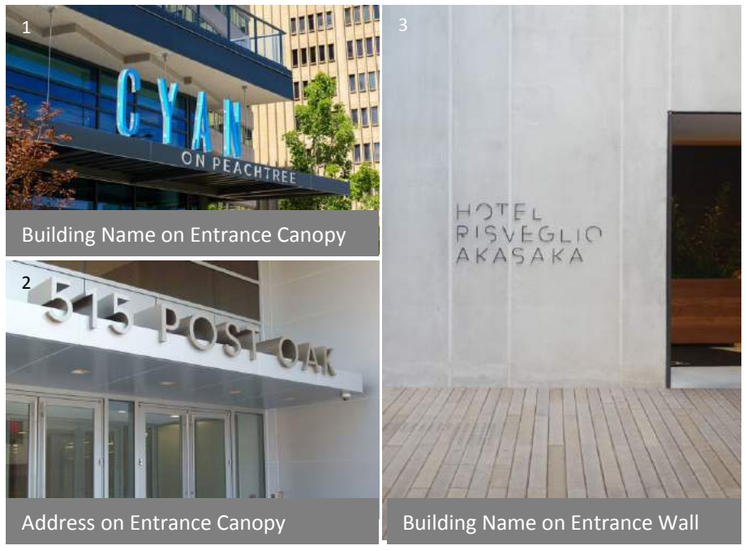



Fig. 7.2 Building Signage


Fig. 7.3 Retail Tenant Signage


Fig. 7.4 Advertising Signage

Sources: (1): DeNyse; (2) Memphite; (3) Artless Inc.; (4) WHATS Inc.;

# 7.2 Sign Types

## 7.2.5 Wayfinding Signage

- Wayfinding signage identify all major intersections and streets by providing appropriate guide information to different areas within the district.
- Wayfinding signage shall be placed at regular intervals along key pedestrian zones, at entrances/ exits of transit stations and at all intersections, with directions to key buildings and destinations within 800 meters (10 minute) walking distance. Maps are encouraged to be included in addition to directional information.
- Wayfinding signage shall be placed perpendicular to the street.
- Wayfinding signage shall clearly mark cultural, tourist, public buildings and transit stations.
- Wayfinding signage shall utilize international symbols with direction arrows. Maps shall be oriented to the viewer. This is to ensure that wayfinding signage are simple and easy to understand.
- Wayfinding signage shall be coordinated and uniform throughout NCC with designs that are complementary across districts and to the urban character of surrounding developments.
- The unique identity of each district shall be reinforced through a set color code for each district in NCC as defined in Chapter 7.3; and the designs shall be complementary to the designs of other signage in the district.
- Design Criteria

| | |
|---|---|
| Quantity | At minimum, one at each intersection; encouraged to place signage at regular intervals |
| Location | Signs may be free-standing or mounted on wall or poles; top of such sign shall not exceed 3.5 meters above grade |
| Size | Face of sign shall not exceed 2.0 square meters; maximum height of 3.5 meters and width of 0.8 meters; maximum thickness 0.3 meters |
| Illumination | If illuminated, halo Illuminated, internally illuminated box letters, or exterior illuminated |
| Material/ Color | Colors shall be in line with the color code of the district (Chapter 7.3); texts and pictograms shall be contrasting and easy to read; materials used shall complement the architecture and urban character of the district |


Fig. 7.5 Wayfinding Signage

## 7.2.6 Gateway Signage

- Gateway signage help identify the entry to NCC and promotes the identity of the city.
- Consistent, distinctive and visible gateway signage shall be provided at all major entry points to NCC.
- The design of the gateway signage shall support the unique identity of the district in which it is located by adopting the set color code for the district in NCC as defined in Chapter 7.3; and the design shall be complementary to the designs of other signage in the district.
- Design Criteria

| | |
|---|---|
| Quantity | One at each major entry point to the city |
| Location | Signs may be placed in the landscape area |
| Size | Face of the sign shall not exceed 10.0 square meters; maximum height of 5.0 meters; and maximum thickness of 0.5 meters |
| Illumination | Halo Illuminated, internally illuminated box letters, or exterior illuminated |
| Material/ Color | Colors shall be in line with the color code of the district (Chapter 7.3); texts and logos shall be contrasting and easy to read; materials used shall complement the architecture and urban character of the district |


Fig. 7.6 Gateway Signage

Sources: (1): Simon Fraser University; (2) Heine Jones; (3) Minale Tattersfield; (4) Stephen Uhraney (Waterloo Chronicle); (5) Speedy Signs Newton; (6) SJ; (7) Mitchell Associates

# 7.2 Sign Types

## 7.2.7 Transit Signage

- Transit signage are signages that announce the location of transit related facilities, such as BRT/ LRT stations, car parking and bicycle parking.
- Transit signage may include the transit logo and/ or name, and related information, such as bus stop routes and parking cost.
- The graphic of transit signage shall be consistent throughout NCC. All transit signage shall utilize international symbols and the appropriate transit logo, if applicable. This is to ensure consistency in the language of signage that is easy to understand.
- The design of transit signage shall be coordinated, distinctive and aesthetically sound throughout NCC. Designs shall be in line with other transit signage across districts, while remaining complementary to the designs of other signage in the district and to the urban character of surrounding developments.
- The unique identity of each district shall be reinforced through a set color code for each district in NCC as defined in Chapter 7.3.
- Design Criteria

| | |
|---|---|
| Quantity | One per entrance, exit or transit station |
| Location | Signs may be free-standing or mounted on wall or pole, and the top of such sign shall not exceed 3.5 meters above grade |
| Size | Face of sign shall not exceed 2.0 square meters; maximum height of 3.5 meters and width of 0.8 meters; maximum thickness 0.3 meters |
| Illumination | If illuminated, halo Illuminated, internally illuminated box letters, or exterior illuminated |
| Material/ Color | Colors shall be in line with the color code of the district (Chapter7.3); texts and pictograms shall be contrasting and easy to read; materials used shall complement the architecture and urban character of the district |

## 7.2.8 Road Traffic Signage

- Road traffic signage includes regulatory road signs, directional and information road signs, warning road signs, and road and pavement markings.
- Road traffic signage must be provided consistently as per Philippines Road Traffic Signs Guidelines.

1 Metro Station Signage

2


3 Bus Stop Signage

4

5 Source: STUDIOMDA Bike Parking Sign

6 Parking Signage

7 Parking Signage

Fig. 7.7 Transit Signage

Sources: (1) Downgraf; (2) SJ; (3) Varlamov.ru; (4) Coroflot; (5) STUDIOMDA; (6) Harbinger Sign; (7) Inspiration Feed

# 7.3 District Signage

7.3.1 In addition to guidelines in Chapters 7.2.5 to 7.2.7, all wayfinding, transit and gateway signage shall also conform with the color code for each district. The different color codes for each district help to coordinate and make uniform the designs of these signages in each district, while establishing a distinctive set of signages in each district that is able to reinforce the unique identity of each district.

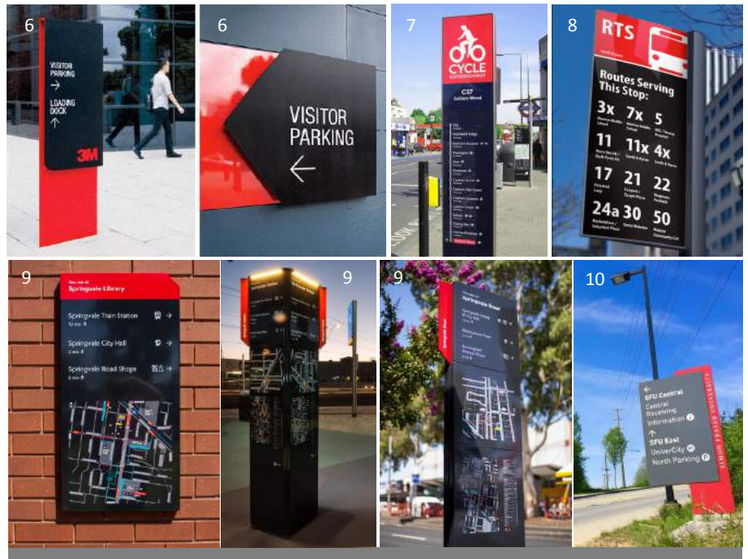
7.3.2 To ensure that the signages remain easy to understand, all signages throughout NCC shall utilize international symbols, consistent logos and design language. Designs of signages shall also be complementary across districts.

7.3.3 The following colors shall be permitted for wayfinding, transit and gateway signage in each district addition to black, white and grey. Large variations in the tint or shade of the color shall be avoided to minimize confusion.

7.3.4 Civic Center - Brown


Example of Civic Center Signage

7.3.5 Downtown - Red




Example of Downtown Signage

7.3.6 North Technopark, South Gate, Clark Hill – 3 Shades of Purple


Example of North Technopark, South Gate and Clark Hill Signage

7.3.7 North Gate - Yellow


Example of North Gate Signage

Fig. 7.8 District Signage

Sources: (1) Heine Jones; (2) Minale Tattersfield; (3) Design Communications Ltd; (4) Oran Viriyincy; (5) Speedy Signs Newton; (6) Harbinger Sign; (7) Wikimedia Commons; (8) Rochester Subway; (9) Melbourne Design Awards; (10) Simon Fraser University; (11) Walk Edmonton; (12) FreeFoto.com; (13) Lorenza Agosti; (14) Phil Riggan (Richmond Times-Dispatch); (15) Applied Wayfinding; (16) Manaus Bike Lounge; (17) Varlamov.ru; (18) Downgraf; (19) Coroflot; (20) IAMCR 2013; (21) Studio Binocular; (22) Inspiration Feed

# 7.4 Temporary Signage Criteria

7.4.1 All signages which are erected during the marketing phase must conform to the established standards as presented in this document.

7.4.2 Marketing sign types include:

- Construction related signage such as construction barricades
- Project identification
- Banners
- Directional
- Regulatory
- Advertisement Signs on lamp posts

7.4.3 Marketing signage include the following components which may be assembled to meet the specific requirements of each property or development:

- Background panel
- New Clark City name and logo
- Tag line or marketing slogan
- Project name
- Project description
- Project rendering or illustration
- District icon and logo
- Project Credits

7.4.4 The design of signs, including the number, size, color, typography, location and material will be subject to approval of the Declarant.

7.4.5 Marketing signage is temporary and will be removed upon the completion of the marketing phase of said project. The marketing phase is defined as the period from the beginning of construction of a project through to the issuance of the certificate of occupancy. If a project is suspended or terminated, the marketing signs will be removed. One leasing or sale sign may be permitted by the Declarant after the marketing phase has expired and until a project is sold or substantially leased.

7.4.6 Locators and developers are responsible for the cost of construction, installation and removal of marketing signs.

# 7.5 Review & Approval Process

7.5.1 To ensure compliance with the Design Standards and Guidelines, all signage shall be reviewed and approved by the Declarant in writing prior to its fabrication and installation. Non-conforming signs will be cited for removal by the Declarant.

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Chapter 08

# Open Space, Landscape & Easement Areas

# 8.3 Public Parks

8.3.1 Public parks include the central park, river parks and other local parks planned within the neighborhood. These public parks are to serve as a node and focal point for the surrounding developments and to enhance the quality of the urban environment of NCC.

## 8.3.2 Access and Movement

- Visual and physical accessibility of parks shall be ensured from neighboring streets and building blocks.
- Pedestrian walkways and Non-Motorized Transport (NMT) passageways shall be provided to promote the connectivity of the Open Space System. These passageways shall conform to the requirements detailed in Chapter 5.4.1.
- Public parks shall be designed for universal accessibility.
- Access control of public parks during night hours is subject to the approval of the Declarant.

## 8.3.3 Urban Form Around Public Green Open Spaces

- Residential, commercial and institutional lots adjacent to public parks shall be oriented to front onto the parks, where possible.
- Buildings fronting public parks shall be developed to enhance views to the park.

## 8.3.4 Facilities

- Public parks shall accommodate both active and passive recreational facilities that reflect the requirements of the particular neighborhood. Facilities include children's playing areas, picnic areas, walking and jogging pathways, bicycling pathways, sports activity zones, etc.
- Seating, socializing and community gatherings areas shall be provided at regular intervals within public parks. These areas shall be sheltered or shaded, where possible.
- Supporting facilities such as information kiosks, wayfinding signage, trash bins and public toilets are to be provided.
- Secured Personal Mobility Device (PMD) or bicycle parking facilities are to be provided at key locations such as at entry points.

## 8.3.5 Lighting

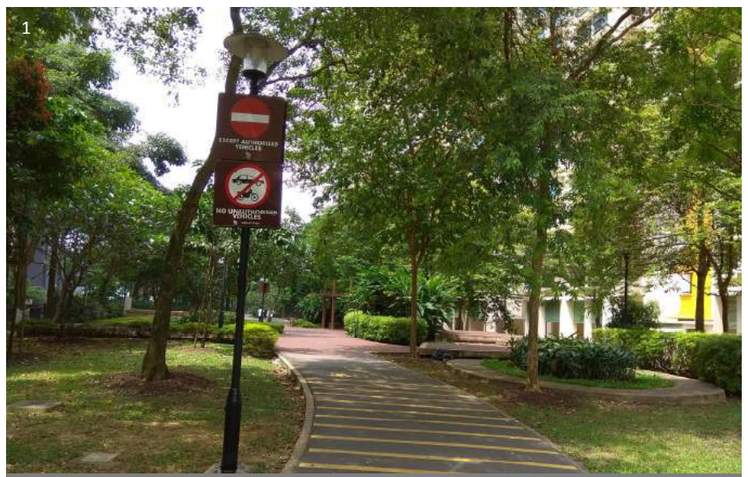
- Lighting shall be designed to promote safety and visibility, in accordance to guidelines in Chapter 6.
- Fencing and boundary walls adjacent to public open spaces shall be well lit at night.

## 8.3.6 Landscape and Materials

- The landscape of the River Park is to be designed as an attractive and accessible public space with urban furniture.
- Features and landscape materials shall complement the urban character and architecture of the particular neighborhood. Materials used must be safe, durable, easily maintained and aesthetically pleasing.
- Proper drainage shall be provided within public parks in compliance to Chapter 12.4. Storm water drains shall be covered and flushed with the paving level. Natural drainage systems are strongly encouraged.
- Park entry points shall be defined with appropriate landmark gateway features to serve as a visual element of arrive.
- Public art and water features are encouraged to create focal points for public interest within public parks. The provision and design of public art and water features shall comply with the guidelines in Chapter 10.

## 8.3.7 Boundary Walls & Fences

- Boundary walls and fences shall be provided for lots adjacent to public parks. They shall be designed to be attractive, porous and low in height, in compliance to Chapter 2.19.




Park Connector Network within a public park


Neighborhood Park


Riverside Park

Fig. 8.2 Public Parks

Sources: (1) & (2) SJ; (3) Building Construction Authority

# 8.4 Easement Area & Plazas

8.4.1 Easement and plazas are areas of publicly accessible public open space that are encouraged, where appropriate, at the intersection of streets and green parks. Easement areas and plazas provide a spill over space for pedestrians to create a safe and comfortable urban environment, while serving a visual and amenity function within private developments. Easement areas shall be developed and maintained at the cost of the Locator.

8.4.2 The following are the types of easement areas provided within private lots in NCC:

- Plaza Easement Area – Public open spaces at the intersection of streets and public parks or green spaces
- Roadway Easement – Greenways along major roads and footpaths, key intersections and gateways
- Landscape Easement – Public landscaped areas adjacent to green spaces and greenways

### 8.4.3 Access and Movement

- Public plazas shall be visually and physically accessible from neighboring streets and building blocks. Plazas shall be design for universal accessibility

### 8.4.4 Urban Form Around Public Green Open Spaces

- Plazas shall be well-designed public spaces that are incorporated into commercial developments to extend public activity outside the building and to serve as both a functional space and attractive public space.

### 8.4.5 Facilities

- Easement areas and plazas shall provide seating areas, such as gathering spaces in plazas and benches along roadway and landscape easements.
- Public plazas shall provide supporting facilities such as wayfinding signages, information kiosks and PMD or bicycle parking facilities.

### 8.4.6 Lighting

- Lighting shall be designed to promote safety and visibility, in accordance to guidelines in Chapter 6.
- Fencing and boundary walls adjacent to plazas shall be well lit at night.

### 8.4.7 Landscape and Materials

- Plazas are to be developed primarily as paved areas that are pedestrian oriented. Features and landscape materials shall complement the urban character and architecture of the particular neighborhood. Materials used must be safe, durable, easily maintained and aesthetically pleasing.
- Public art and water features are encouraged within plazas to create focal points for public interest and to enhance the visual importance and significance of the surrounding area. The provision and design of public art shall comply with the guidelines in Chapter 10.
- Roadway easements are to be planted with trees to serve as a greenway and to visually define and reinforce major roads and pedestrian ways. The spacing, size and variety of tree must match those along adjacent streets and are to conform with the guidelines in Chapter 8.6, unless otherwise indicated by the Declarant.
- The landscape easements shall serve as attractive landscape areas for both passive and active recreation.

### 8.4.8 Boundary Walls & Fences

- Fences and walls are allowed along easement lines adjacent to buildable areas within a plot. No walls or fences are allowed within easement areas.
- Fences and walls shall be designed to be attractive, porous and low in height in compliance to Chapter 2.19. Where appropriate, fences and walls shall be avoided, to allow an extension of open spaces within the lots into the outdoor public space. Otherwise, the use of seating walls or free-standing benches is encouraged.

1

Public Plaza above the train station

2

Activity at Public Plaza

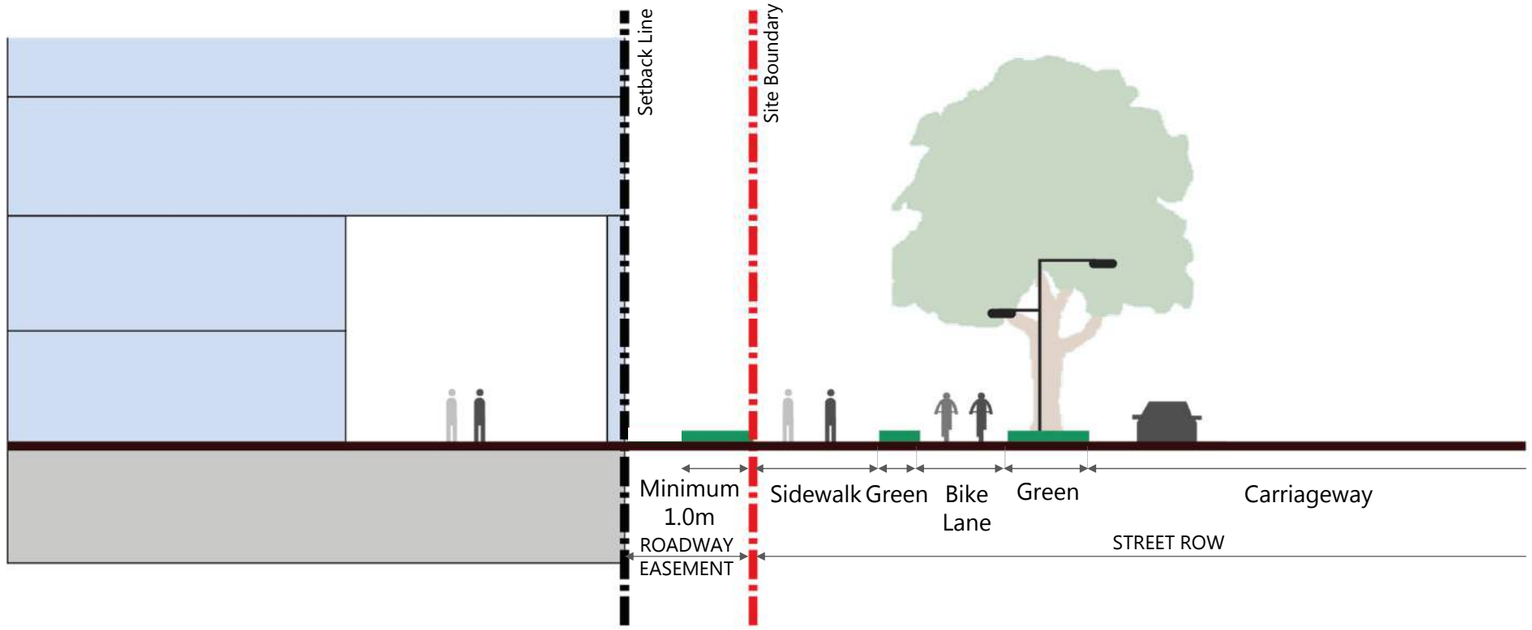
3

Public Plaza located next to the major traffic junction

Fig. 8.3 Easement Area & Plazas

Sources: (1) Mariott Hotels; (2) Zula; (3) Office of Cheryl Barton

# 8.4 Easement Area & Plazas





Roadway Easement

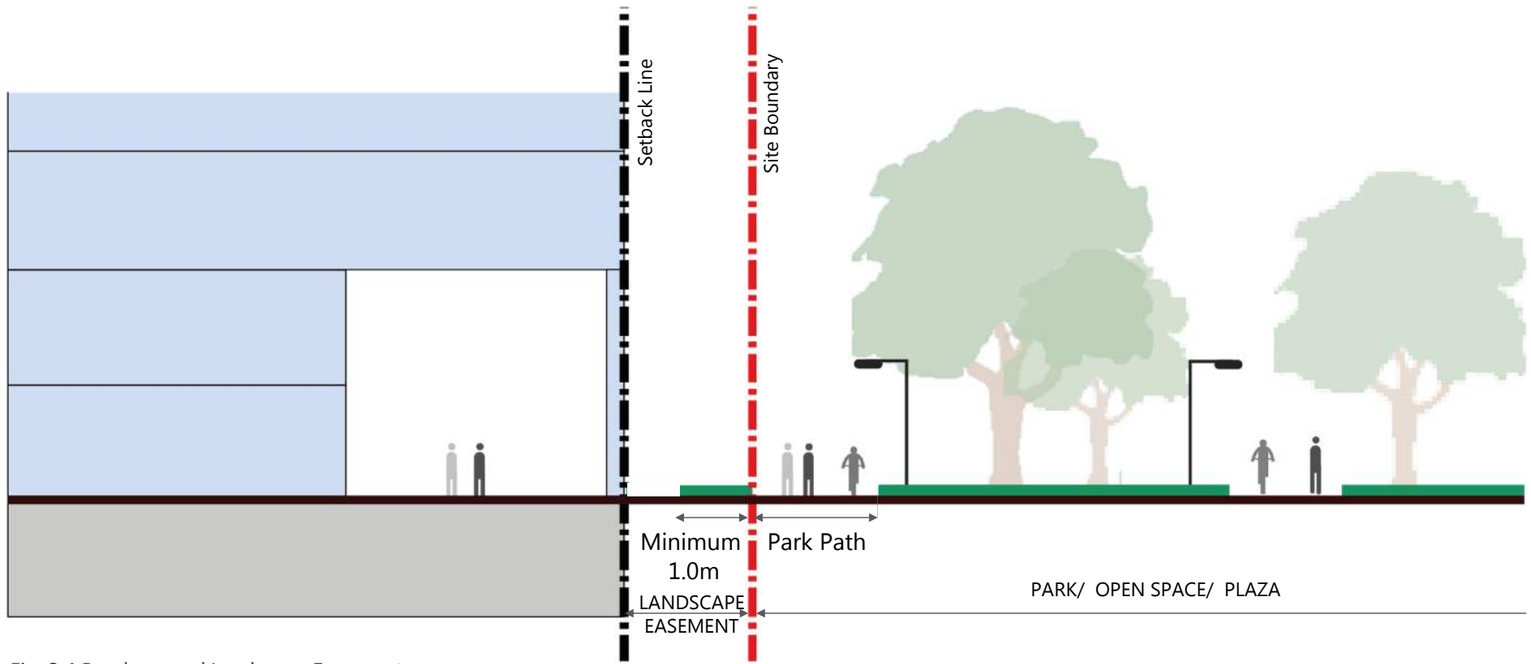
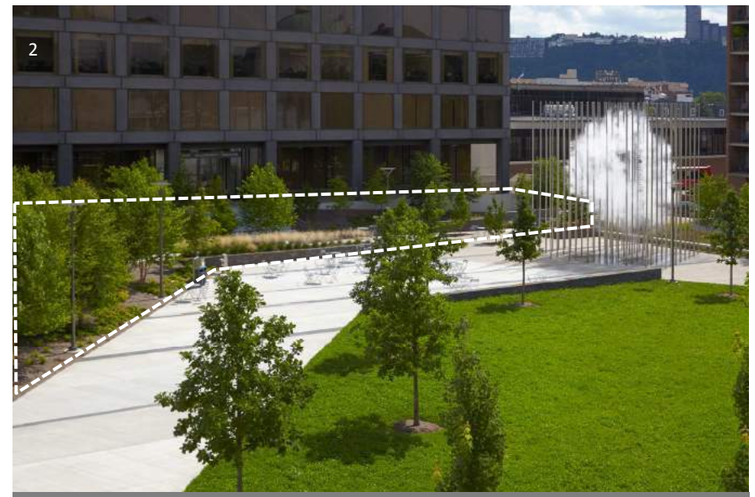



Fig. 8.4 Roadway and Landscape Easements




Landscape Easement

Sources: (1) City of Seattle Office of Planning and Community Development; (2) Landezine

# 8.5 Streetscape

## 8.5.1 Street Right-of-Way (ROW)

- The streetscape or street ROW shall include landscape areas, and pedestrian and NMT zones that prioritize the safe movement of pedestrians, cyclists and PMD users, as indicated in street sections shown in Figures 11.2 to 11.5.
- Landscape zones are intended to provide a buffer to pedestrian and cyclist zones within the ROW.
- Utility zones, required for the installation and maintenance of various utility lines, shall be integrated with the landscape zones planned within the ROW. Public use of these landscape areas may be suspended if access to utility lines so necessitates.

## 8.5.2 Facilities and Lighting

- The streetscape shall provide street furniture including streetlights, signage, transit stops, trash bins, benches, wayfinding signage, kiosks, bicycle racks, electric vehicle sharing stations and cigarette receptacles.
- All street furniture shall be aesthetically uniform and shall complement the urban character of the particular district.
- The design and placement of street furniture shall conform to the guidelines in Chapter 9.
- The design of street furniture, such as lighting and signages, shall conform to the Design Standards and Guidelines in Chapters 6 and 7.

## 8.5.3 Landscape and Materials

- Pavement, roadside railing and landscape materials shall complement the urban character of the district. Paving materials used must be safe, non-slip, durable and easily maintained, and aesthetically pleasing.
- Dedicated space for planting and bioswales designed for water drainage management shall be planned within the ROW, where feasible.
- Planting shall conform to guidelines in Chapter 8.6.

1 Street furniture (trash bin, bench, advertising signage and transit shelter)


2 Bicycle Rack


3 Bio swale within ROW

Fig. 8.5 Streetscape

Sources: (1) Program Contractors; (2) SJ; (3) NACTO (image cropped)

# 8.6 Technical Criteria

8.6.1 All landscape plans are subject to the written approval of the Declarant. All submitted plans must include detailed information regarding plant materials, paving, and other features and facilities. All design submissions shall include design for irrigation.

8.6.2 Trees shall be planted at close regular intervals to create a continuous tree canopy, while ensuring adequate soil space for root growth and long-term tree health. Large gaps in the tree canopy shall be avoided, where possible. Accounting for other relevant clearance requirements, trees are to be typically planted as follows:

| Tree Type | Interval |
|---|---|
| Small Tree | Spaced at 7 to 10 meter intervals |
| Medium Tree | Spaced at 10 to 15 meter intervals |
| Large Tree | Spaced at 15 to 20 meter intervals |

8.6.3 The clearance from the edge of a proposed road element to the center of a proposed street tree shall conform to the requirements indicated in Table 8.1 and Figure 8.6.

Table 8.1 Street Planting Clearance

| Roadside Element | Minimum Street Tree Planting Clearance | | |
|---|---|---|---|
| | Small Tree | Medium Tree | Large Tree |
| Streetlight | 2.0m | 2.0m | 4.0m |
| Drain | 1.0m | 1.5m | 2.5m |
| Traffic Light | 2.0m | 2.0m | 2.5m |
| Crossings | 1.5m | 2.0m | 4.0m |
| Driveway Access | 1.0m | 1.5m | 2.5m |

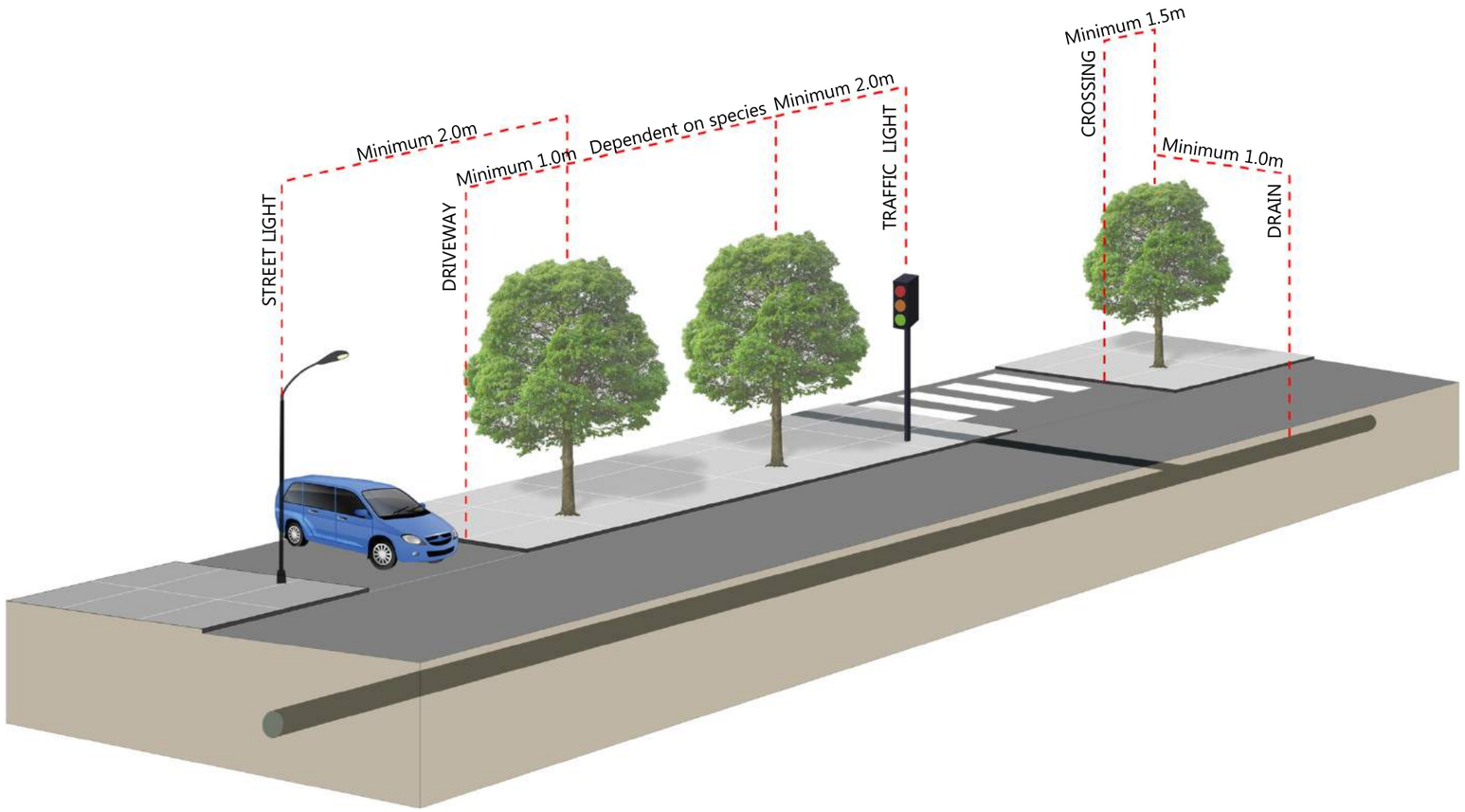



Fig. 8.6 Street Planting Clearance

# 8.6 Technical Criteria

8.6.4 Guidelines recommended for plant sizes during planting are as follows:

| | |
|---|---|
| Sapling Tree | 2.5m minimum total height; 1.5m clear trunk height |
| Instant Tree | 2.0m clear trunk height |
| Palm Tree | 2.0m minimum total height |
| Shrubs | 0.3m to 0.5m height |
| Hedges | 1.0m minimum height |
| Turfing | 0.15m minimum spread; 0.05m thickness |

8.6.5 The basic criteria for plant selection are as follows:

- Where possible, large street trees shall be selected to provide a larger canopy that enhances the aesthetics and environmental performance of the street.
- Utilize native, deep-rooted, drought tolerant and high-branching deciduous tree species where possible. Some species in the NCC street tree palette are shown in Figure 8.7.
- Tall dense bushes and hedges shall be avoided to prevent obstruction to visibility and accessibility. Plant species that a poisonous and spiky are also not allowed.
- Avoid the use of trees with invasive root system near utilities, pavements, curbs walls and other structures. Where such species must be used, root barriers will be required to protect existing or proposed utilities and structures.
- Avoid tree species which cannot hold up during typhoon.
- The selection of which species to plant and the exact location within the street shall be at the sole discretion of the Declarant.


Cratoxylum cochinchinense


Diospyros blancoi


Lagerstroemia speciosa


Syzygium lineatum


Filicium Decipiens


Terminalia Mantaly


Ficus benjamina


Ficus crassiramea


Acacia Mangium


Delonix Regia


Pongamia pinnata


Syzygium polyanthum


Ficus caulocarpa


Horsfieldia irya


Podocarpus neriifolius


Sterculia macrophylla


Erythroxylum cuneatum


Swietenia macrophylla

| Small Tree (6m to 15m) | Medium Tree (16m to 30m) | Large Tree (>30m) |
|---|---|---|
| Cratoxylum cochinchinense | Ficus benjamina | Ficus caulocarpa |
| Diospyros blancoi, | Ficus crassiramea | Horsfieldia irya |
| Lagerstroemia speciosa | Acacia Mangium | Podocarpus neriifolius |
| Syzygium lineatum | Delonix Regia | Sterculia macrophylla, |
| Filicium Decipiens | Pongamia pinnata | Erythroxylum cuneatum |
| Terminalia Mantaly | Syzygium polyanthum | Swietenia macrophylla |

Fig. 8.7 Street Tree Palette

# 8.9 Wild Life Crossing & Corridor

8.9.1 Habitat fragmentation is one of the major impact of NCC project on flora and fauna. Fragmentation is the process where habitats that were once continuous become divided into separate fragments isolated from each other by non forest land.

8.9.2 Wild life crossing and corridor are recommended in NCC in order to connect fragmented forest reserves and assist animals to move between fragmented forests without collisions with vehicles (figure8.12).

8.9.3 Wild life crossing and corridor shall be links of native vegetation. Wild life crossing may include underpass tunnels and/or overpasses (figure 8.11).

8.9.4 Exact location and design of wild life crossing and corridor are subject to a further study by an appointed environmental specialist.

Fig. 8.11 Example of Wild Life Crossing

Sources: http://i.imgur.com

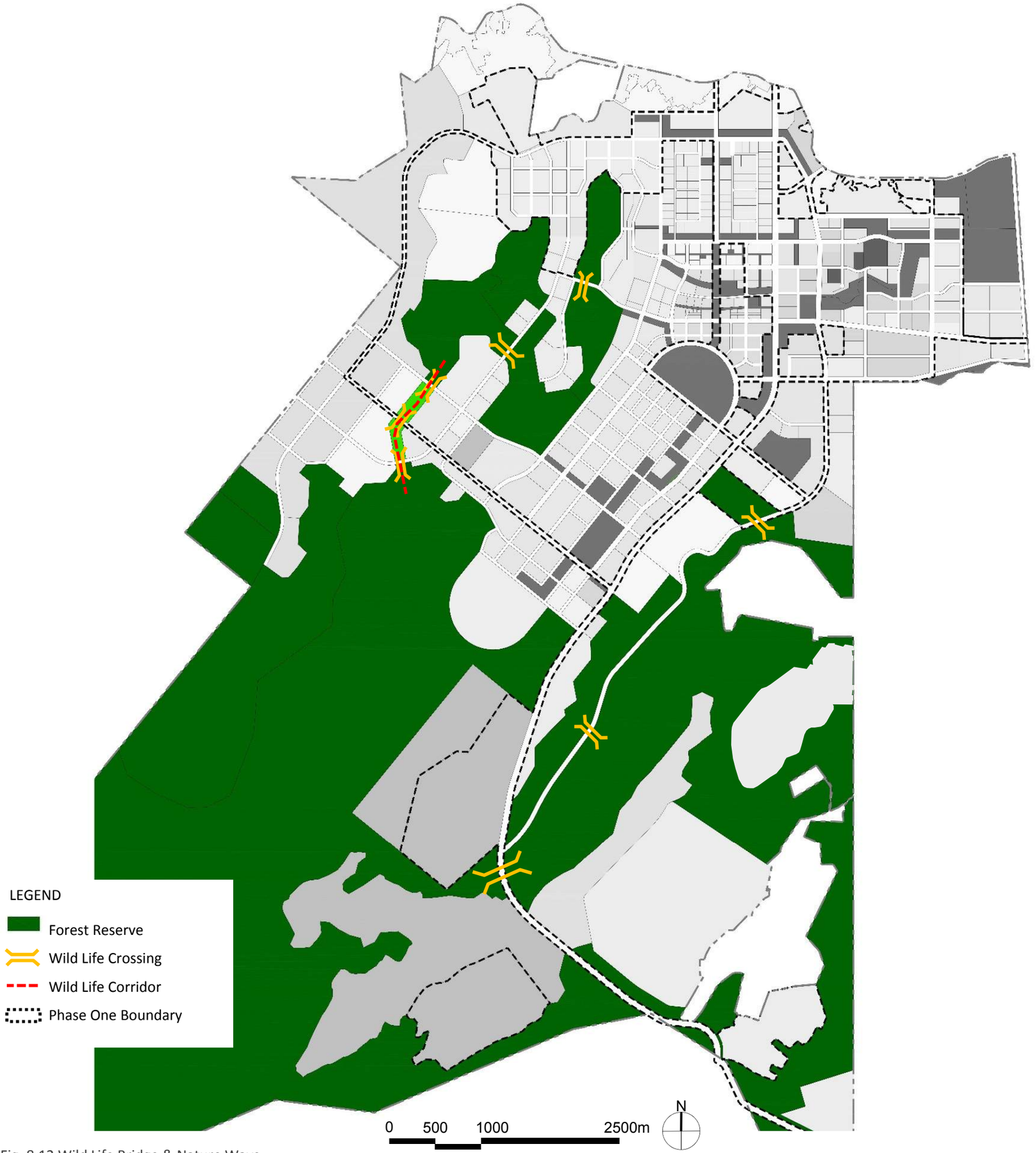



Fig. 8.12 Wild Life Bridge & Nature Ways

# Chapter 9

# Public Furniture

# 9.1 Introduction

9.1.1 Objectives of the Public Furniture Guidelines are as follow:

- To enhance the attractiveness, liveability and character of the community, and create inclusive public areas.
- To reinforce the identity of individual districts in NCC and that of the whole city.
- To establish coordinated, distinct, functional and aesthetic design criteria for public furniture that complement the architecture and urban character of NCC while ensuring universal accessibility in public areas.
- To increase the appeal of Non-Motorised Transport (NMT) modes by enhancing the streetscape.

# 9.2 General Guidelines

9.2.1 Public furniture includes street elements such as seating, transit stops, bicycle parking and racks, trash and recycling bins, recreational facilities, and public toilets.

9.2.2 All Locators are encouraged to provide public furniture within their developments and along easement areas to contribute to inclusive, attractive and livable public spaces.

### 9.2.3 Location

- Priority locations for furniture placement include transit stations and stops, major destinations and areas of high pedestrian traffic, such as commercial and civic areas, public parks and plazas, and locations of higher urban density.
- Street furniture shall be placed such that they do not obstruct the pedestrian and NMT transport zones when used. The minimum clear width for pedestrian passageways shall be maintained and in accordance to Chapter 5.

### 9.2.4 Design and Material

- All public furniture shall be aesthetically uniform and shall complement the architecture and urban character of the particular district.
- Public furniture shall be designed to be comfortable and suitable for people of all ages. They shall be designed according to the principles of universal design.
- Materials used shall be durable, easily maintained, of low heat conductivity and with high quality finishes. Where possible, the use of local materials is encouraged to respect and showcase the local context.
- Public furniture that is crafted locally is encouraged to showcase local craftsmen and artists.

### 9.2.5 District Identity

- The design of public furniture shall enhance the unique identity of the particular district in which it is located. This may be done by adopting a unique and uniform material palette, logo, color or design that celebrates the image and overall branding of each district.
- Public furniture may serve as a unique focal point in a district by integrating with public art.
- Street furniture that is part of LRT/ BRT transit system can be uniquely differentiated with a recognizable brand identity to improve the image of transit and provide a better experience for the transit passengers, as the transit network evolves in the future.
- Around the key destinations such as the central park, river park, sports park, civic or cultural significance, more specific or targeted design solutions shall be considered. It is recommended that a context sensitive approach is undertaken to integrate street furniture with a high-quality streetscape design, to create a unique identity for special destinations in NCC.

### 9.2.6 Maintenance

- The continued maintenance of public furniture will be done by the respective Locator at his sole expense and to the reasonable satisfaction of the Declarant.

1 Bicycle racks made of durable local materials

2 Complementary furniture design with unique color code for district identity

3 Public seating as public art

Fig. 9.1 Public Furniture Design

Sources: (1) Streetlife.nl; (2) ArchiExpo (Mmcite); (3) Escofet.com

# 9.3 Seating

9.3.1 Seating shall be provided regularly along pedestrian routes and at major pedestrian nodes, gathering places and transit stops, but shall not obstruct pedestrian circulation. Preferably, seating is encouraged at 100-meter intervals, with accessible seating at every 400 meters. Seating areas shall also be non-secluded to ensure better security and public surveillance.

9.3.2 A diversity of type of seating is encouraged to accommodate groups of various sizes and a range of physical abilities and ages. For example, seating areas shall provide companion seating with spaces for wheelchair users and baby carriages. Seating shall also be arranged to facilitate social interaction.

9.3.3 Types of seating include benches, chairs, seat walls and various types of perches. Movable seating is encouraged where there is sufficient space to allow people to create their own seating areas.

9.3.4 Where possible, seating areas shall be shaded or sheltered to ensure a level of protection from the elements. Any signs or shade elements located above seating areas shall have a minimum height clearance where it is located at least 2 meters from the ground.

9.3.5 Some seating shall provide armrests and backrest to provide support for older persons.

9.3.6 Seating shall be provided at a height of between 430 mm and 470 mm.

9.3.7 Seating shall visually contrast with surrounding walls and floor surfaces so that they are readily identifiable.

# 9.4 Transit Stops

9.4.1 Transit stops shall be sheltered and incorporate seating to provide comfort to transit users.

9.4.2 Transit stops shall be accessible in design and access. For example, steps shall be avoided along access routes and at alighting and boarding areas.

9.4.3 Wayfinding signages and other informational signages that provide information on transit routes and timing is encouraged.

9.4.4 Where possible, adjacent developments shall provide sheltered connections to transit stops.

9.4.5 A clear width of 1.5 meter shall be maintained between benches and the street edge.

# 9.5 Bicycle Parking

9.5.1 Bicycle parking is encouraged at the entrances of larger developments, at parks and public facilities, and transit stations and stops.

9.5.2 Bicycle parking and racks may be integrated with other public furniture elements.

9.5.3 Where possible, bicycle parking shall be sheltered and secure, such as through the provision of bicycle shelters and bicycle lockers.

9.5.4 The provision of wayfinding signages to major destinations, transit stops and stations, and other guide maps catered to cyclists is recommended at bicycle parking areas.


Movable and varied seating help facilitate social interaction

Fig. 9.2 Public Seating


Transit stop with map, seating, shelter and public library

Fig. 9.3 Transit Stop


Bicycle Shelter

Fig. 9.4 Bicycle Shelter

Sources: (1) Street Furniture Australia; (2) Metalco; (3) Klaver Fietsparkeren

# 9.6 Trash & Recycling Bins

9.6.1 A combination of both trash and recycling bins are encouraged to promote recycling in NCC.

9.6.2 Trash and recycling bins may bear the logo or name of the district in which it is located to enhance the identity of the district.

9.6.3 Trash and recycling bins shall have a minimum volume of 120 liters and be emptied frequently, especially within commercial zones.

# 9.7 Recreational Facilities

9.7.1 Recreational elements are encouraged to add interest to the streetscape. They shall be located where they are physically and visually accessible.

9.7.2 Recreational elements shall appeal to all ages and abilities. Recreational facilities shall be sensitively designed to be barrier free and accessible, and prioritize the safety of all users. Facilities for children shall be stimulating, educational, and suitable for children of various ages, while those for adults shall be suitable for use by older persons.

9.7.3 Facilities for children shall be located close to adult activities to encourage multi-generation integration.

9.74 Where possible, shading or shelter shall be provided with a minimum 1.8-meter height clearance.

9.7.5 Examples of recreational facilities include fitness facilities, playgrounds, climbing areas, community gardens, etc.

9.7.6 Seating is encouraged near play facilities.

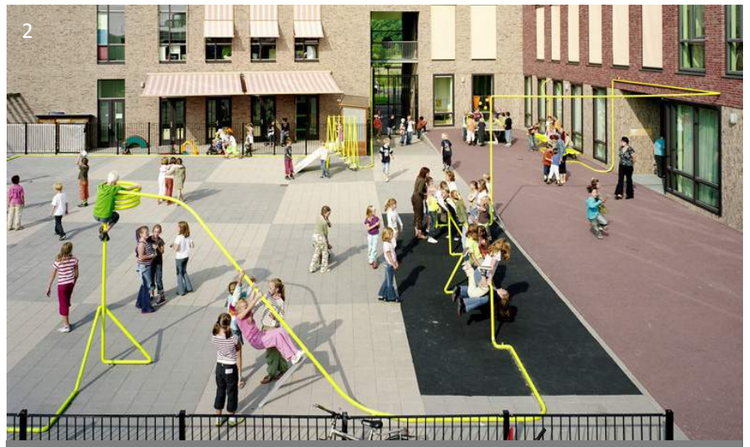
# 9.8 Other Facilities

9.8.1 Public toilets are encouraged near areas of attraction such as public areas of developments and at public green and open spaces to offer comfort, hygiene, accessibility and security to the public. These toilets shall be wheelchair-friendly and accessible.

9.8.2 Other facilities such as drinking fountains and stroller parking are encouraged at public parks and major gathering places, where appropriate.


1 Recycling and trash bins inspired by Central Park's iconic benches

Fig. 9.5 Trash and Recycling Bin



2 Multi-generation play facility

Fig. 9.6 Recreational Facilities


3 Wheelchair-friendly public toilet

Fig. 9.7 Public Toilet

Sources: (1) Central Park Conservancy; (2) Bas Princen; (3) Marilynn K. Yee (The New York Times)

# Chapter 10

# Public Art

# 10.1 Introduction

10.1.1 Objectives of the Public Art Guidelines are as follows:

- To reinforce the image and vision of NCC.
- To activate and enliven the urban environment with opportunities for visual stimulation, interaction and delight.
- To reflect local culture and/ or character.
- To provide a focal point in shared public spaces such as parks, plazas or seating areas.
- To encourage artistic expression, foster a sense of pride, and prevent vandalism in public spaces.

# 10.2 General Guidelines

10.2.1 Public art enhances the identity of a city and enriches the quality of life in the city. This is dependent on the quality of the art, its sensitivity to the social context and its relationship to the site.

10.2.2 The guidelines in the Design Standards and Guidelines are intended to clarify the process and respective roles of artists and clearly identify the avenues through which public art may be developed. In developing these guidelines, the Declarant seeks to facilitate the creation of a special local Philippine identity within the various zones in NCC through a high standard of public art.

10.2.3 Locators shall participate in the development of public art by contributing to an art fund for, and dedicated to, the development, maintenance and preservation of public art once the art fund is set up by the declarant.

10.2.4 Locators shall contribute to the Art Fund based on the permissible GFA of his lot. The Art Fund contribution shall be computed at 100 pesos per square meter of permissible GFA, subject to reasonable adjustments as deemed necessary by the Declarant.

10.2.5 Monies allocated to the fund will be spent to facilitate the creation of a distinctive urban character for each district through the incorporation of a wide range of art works. These may include special or landscape features such as fountains, street furniture (benches, lamp posts, letter boxes, etc.), as well as works of art.

10.2.6 All Locators are encouraged to work towards creating and maintaining this identity of NCC by participating in the development, maintenance and preservation of public art.

10.2.7 A selection committee for the selection of artists shall be organized by the respective Locator and shall involve the Declarant.

# 10.3 Public Art Criteria

10.3.1 Appropriateness

It shall be closely integrated with other streetscape elements, be appropriate in relationship to its physical site and enrich the quality of public space.

10.3.2 Relevance

It shall be sensitive to its social context so that the surrounding developments and their users and visitors may relate to it in a meaningful way.

10.3.3 Accessibility

It shall be accessible for all so that it may be experienced without complicated explanation. It is encouraged to be interactive, so that it may stimulate play and recreation. It may also be incorporated into street elements such as into the landscape or benches. Participatory design from the community is strongly recommended so that residents and users of the space may evoke a sense of ownership.

10.3.4 Visibility

It shall be highly visible from long distances or provide a sense of discovery.

10.3.5 Aesthetic Significance

It shall be of an aesthetic design and be of lasting and universal quality.

10.3.6 Uniqueness

It shall be interesting, unique and thought provoking, with artists that are well respected to attract local, national or international attention.

Public art in each zone in NCC is to adopt a precinct approach where the public art in each zone will reinforce the unique character of the particular zone in NCC in which it is located. This will help to establish a unique identity and recognizability for each zone that complements the urban character of that district.

10.3.7 Durability

It shall be constructed with high quality materials and craftsmanship to ensure durability and resistance to the climate, as well as require minimal maintenance.

Showcase local culture and character

Provide focal point for a public space

Fig. 10.1 Examples of Public Art

Source: (1) & (2) SJ

# 10.4 Eligible Public Art Location

10.4.7 Eligible works of art include, but are not limited to, the following:

- Sculpture
- Decorative Play Elements by artists
- Decorative Water Features by artists
- Decorative Green Wall by artists
- Decorative Pavement by artists
- Paintings
- Murals
- Glass
- Photography
- Tapestry
- Mosaic Tile
- Street furniture, including transit stops, streetlights, benches, grills, and signage by artists

10.4.8 Art works may be of any media or combination of materials appropriate to the work of art and its physical environment.


Fig. 10.3 Examples of Eligible Works of Art

Sources: (1) The Lawn on D (Yelp); (2) Landezine; (3) Escofet.com ; (4) Great-parks.com; (5) PJIC; (6) Little Day Out; (7) Telegraf; (8) Philadelphia Public Art; (9) PWP Landscape Architecture

# 10.5 Scale

10.5.1 Artworks may be of the following three (3) scales:

- Monumental Scale
- Human Scale
- Residential Scale

### 10.5.2 Monumental Scale

Monumental scale artworks are to be installed at key locations, arrival plazas, or large parks. Such artworks include significant sculptural elements that are memorable and high visible from long distances. They may be experienced both from vehicle and at the pedestrian level, and shall be interactive and well-lit at night.

### 10.5.3 Human Scale

Human Scale artworks include artworks dedicated to placemaking. They shall be well lit, interactive and experienced at pedestrian level.

### 10.5.4 Residential Scale

Residential scale artworks are dedicated to residents and include artworks such as neighborhood/ children's parks and play areas. They serve to enrich functional and architectural elements.


Monumental Scale Public Art


Human Scale Public Art


Residential Scale Public Art

Fig. 10.4 Public Art Scale

# 10.6 Public Art for SEA Games

10.6.1 Public art around the stadium and sports arena shall represent the spirit and theme of the SEA Games.

10.6.2 Artworks may showcase national sport or local sports in different areas of the arena.

10.6.3 Artworks shall be in different scales for variety and enrichment of public spaces around the arena.

10.6.4 Artworks shall create focal points in key areas of public movement.


Example of a Public Art in front of a stadium


A Stamp of popular sports in Philippines

Fig. 10.5 Example of Public Art for SEA Games 2019

Sources: (1) SJ; (2) Remember Singapore; (3) Arieanna Schweber; (4) The Australian; (5) Philippine Post

# 10.7 Maintenance

10.7.1 The continued maintenance of public art will be done through the respective Locator at his sole expense and to the reasonable satisfaction of the Declarant. The Locator shall include maintenance provisions in the artwork contract that stipulate the duration of time the artist will be responsible for repairs, urge artists to provide a maintenance manual, and will allow the artist first-refusal on repair contracts within a fair market rate of remuneration.

10.7.2 The maintenance manual shall include a statement regarding the materials from which the piece is fabricated. The Locator will be responsible for communicating this information to its custodial staff and providing any necessary additional tools or equipment to ensure proper daily maintenance of public artworks.

# 10.8 Implementation

10.8.1 The selection committee shall facilitate the creation of a distinctive urban character for each district through the incorporation of a wide range of art works.

10.8.2 Artist selection will be subject to one of the following forms of selection by the selection committee:

- Open Competition

  The Open Competition is a call-for-entries for a specific project. Artists will be asked to submit samples of their past work, as well as proposals for the project at hand. The types of work sought in the competition will depend on the requirements of the site as determined by the Master Plan. Proposals shall only indicate preliminary ideas and direction of the artist's concept. Artists will not be paid for this preliminary proposal.

  The call-for-entries will make clear the parameters of the art component through a thoroughly developed Request for Qualification process so that artists who are not eligible do not waste their time applying and so that the selection process is not unduly burdened with unnecessary applications.

- Invitational Competition

  The Invitational Competition is a process in which a limited number of artists will be asked to submit proposals for a specific site(s). Selected artists will be contacted and sent project specifications. They will also be asked to visit the site, if possible, and subsequently meet with key project people. The artist must understand the project and the community the project is intended to serve. A thorough briefing, including meeting and supplementary material will help candidates to understand the context of the project.

  Proposals will not need to be elaborately detailed but will have to indicate the general direction of the artist's thinking. Artists may or may not be paid for this preliminary proposal.

- Direct Selection

  An appropriate list of candidates will be developed. Several artists will be chosen and ranked by preference. A briefing session will be organized for the chosen artist to meet the project team.

10.8.3 Whichever the selection method adopted, preference shall be given to local Philippine artists to enhance the local character and identity of NCC, and to provide a platform for Philippine artists to gain international exposure.

# Chapter 11

# Road Design

# 11.4 Access Control

11.4.1 This chapter addresses the non-signalized access to and from a property along a road. This type of access points may cause traffic accidents and congestion. Thus, proper access control is critical for managing the traffic of the entire NCC. The access control from a road to each development area shall be regulated based on the classification of the road, as summarized in Table 11.2.

### 11.4.2 Arterial Road

The access to a property from an arterial road shall be prohibited to maintain smooth traffic flow. Access shall be tapped from lower level roads, where possible. However, if there is no other reasonable access available, right turn shall be permitted. When Locators design an unsignalized access point to their own property, they shall take measures to avoid traffic conflict in the arterial road, such as through the construction of a frontage road (Figure 11.6) or backage road (Figure 11.7).

### 11.4.3 Frontage Road

Frontage road shall be a one-way road. Separation of frontage roads at cross streets shall be maximized to ensure sufficient storage for cross-road traffic between frontage roads and the arterial road.

### 11.4.4 Collector Road

Unless where there is no reasonable access from a local road, access from a collector road shall be prohibited. When providing unsignalized access, it must be physically blocked by a median to prohibit left turns (Figure 11.8).

### 11.4.5 Local Road

Access from local roads are permitted as long as the design ensures traffic safety.

Table 11.2 Road Classification and Driveway Design Permission

| Road classification | Driveway |
|---|---|
| **Arterial Road** | Generally Prohibited. Right turn is permitted if no other reasonable access exists |
| **Collector Road** | Permitted. left turn is prohibited/ it shall be blocked by a median |
| **Others (Local Road)** | Permitted |

**Example**

An access driveway shall be tapped to lower level roads.
However, if there is no other option, frontage/ backage road shall be provided.

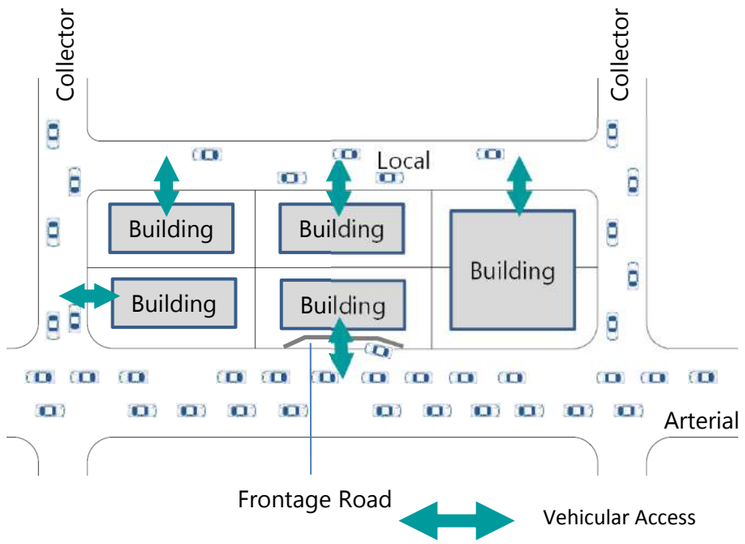



Fig.11.6 Example of Access to Each Lot

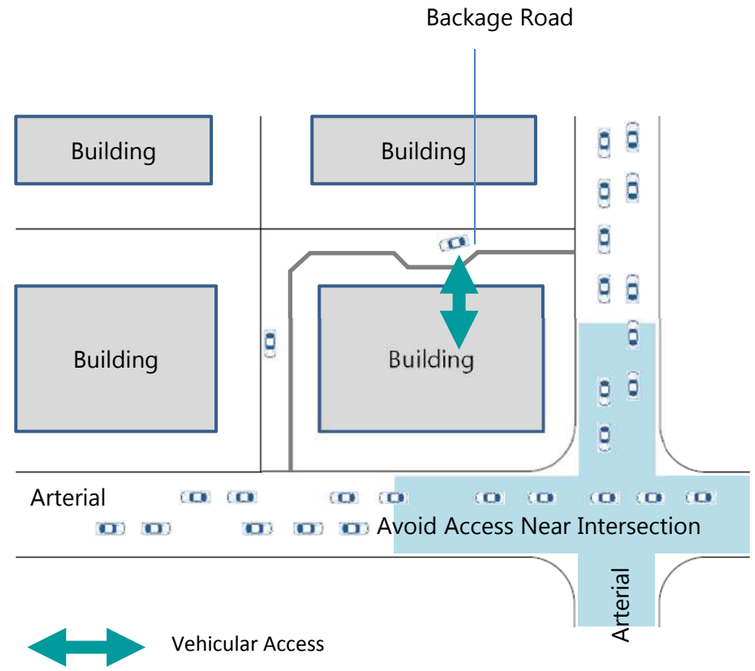



Fig.11.7 Example for Adopted Backage Road

Median blocks accesses by left-turn from collector road

Without median, too many vehicle left-turns can cause conflict on major roads

Fig. 11.8 Unsignalized Access with Median

# 11.5 Pedestrian Circulation

11.5.1 Pedestrian walkways shall be designed to ensure pedestrian safety. Especially where large number of pedestrians are predicted to cross the road and where pedestrians have longer crossings, pedestrian crossings are to be designed properly so that pedestrian and vehicle conflicts are minimized. The width of pedestrian crossings shall be determined based on its estimated demand.


Elevated Pedestrian Link


Elevated Pedestrian Link

Fig. 11.9 Pedestrian Crossings

Sources: (1) Big Bridge; (2) Bicycle Dutch

# 11.6 Intersections

11.6.1 The design criteria of intersections shall comply with the following guidelines:

- Design Speed at intersections is subject to the limits as detailed in accordance to Table 11.3.

Table 11.3 Road Classification and Design Speed

| Road classification | Design Speed (km/h) |
|---|---|
| Arterial Road | 60/70/80/90/100 |
| Collector Road | 50/60/70 |
| Local Road | 20/30/40 |

- Minimum Curve Radius shall be determined by design speed in accordance to Table 11.4.

Table 11.4 Design Speed and Minimum Radius

| Design Speed (km/h) | Minimum Radius (m) |
|---|---|
| 40 | 60 |
| 50 | 115 |
| 60 | 185 |
| 70 | 290 |
| 80 | 405 |

- Vertical Alignment shall be based on road classification. DPWH and AASHTO's design criteria are shown in Table 11.5.

Table 11.5 Vertical alignment in DPWH and AASHTO

| Road Class (US/ Philippines) | Desirable (%) | Maximum (%) |
|---|---|---|
| Arterial / Provincial Road | 6.0 | 7.0 |
| Collector/ City Road | 6.0 | 8.0 |
| Local/ City Road | 6.0 | 9.0 |

- Climbing Lane shall be provided when road gradient is more than the desirable gradient and the road is assumed to be used by heavy trucks or trailers to allows small cars to pass slow speed vehicles.

Climbing Lane

Fig. 11.10 Climbing lane

# Chapter 12

# Utilities

# 12.1 General

12.1.1 The Design Standards and Guidelines are a supplement to the existing National Building Code and appropriate Philippine and utility agency codes, which must be fully complied with in addition to the guidelines stated within this document.

# 12.2 Water Supply

### 12.2.1 Water Meter Chamber

The water meter chamber shall be located not more than 1m from the boundary line along internal access roads.

### 12.2.2 Storage Tank

The service shall be connected to storage tank(s) provided by the locator within the plot boundary.

### 12.2.3 Water Pump

No water pumps directly connected to a water main of the Declarant shall be permitted. Booster pumps may be installed to pump water from a ground storage tank of adequate capacity supplied by natural pressure from the Declarant's water mains. The installation of booster pumps shall require the prior written consent of the Declarant and shall comply with other applicable requirements provided in this Design Standards and Guidelines issued pursuant thereto.

### 12.2.4 Water Meter Room

The Locator shall provide a space within the plot and/ or building(s) for a meter room accessible from the outside at all times. No rent or charge for the meter room shall be charged to the Declarant and/ or the Water Supplier.

### 12.2.5 Utility Agency Requirement

The Locator shall accommodate the required provision of water supply and comply with the utility agency requirements.

# 12.3 Electricity Supply

### 12.3.1 General

The Locator shall accommodate the required provision of utilities and comply with the National Building Code, Philippine Electrical Code, and/ or the utility agency requirements.

### 12.3.2 Electricity Component Space

The Locator shall provide a space to accommodate the electrical components to the specifications of the utility agency. The Locator shall allow reasonable access to this space. It is the responsibility of the Locator to obtain design and construction criteria and building code compliance from the appropriate government and utility agencies.

1 Wind Turbine

2 Solar Panels

Fig. 12.1 Alternative Energy Sources

Sources: (1) Relex Italia; (2) The European Synchrotron

# 12.4 Drainage Design

### 12.4.1 Drainage Connection

Sewerage and storm water drainage connections shall be provided by the Declarant up to the boundary of each plot. The Locator shall construct and maintain at his own expense such drains and channels within the boundary of his lot, to intercept and convey into the nearest connection of the sewerage/ storm water drainage system.

### 12.4.2 Water Discharge

The Locator shall not discharge directly or indirectly, or cause or permit or suffer discharge into any public sewer, storm water drain, channel, stream-course or sea any trade effluent or foul or contaminated water or cooling or hot water without the prior written consent of the Declarant or the appropriate government agency, who may as a condition of granting its consent require the Locator to provide, operate and maintain at the Locator's own expense, within the lot or otherwise and to the satisfaction of the Declarant or the appropriate government agency, suitable works for the treatment and disposal of such trade effluent or foul or contaminated or cooling or hot water.

### 12.4.3 Drainage System Maintenance

The Locator shall be responsible for the maintenance of the sewerage and storm water drainage system within his own property and the individual connections to the public sewerage and storm water drainage system.

### 12.4.4 Drainage Network

The Locator is not allowed to change river alignment, without permission of the Declarant, because it may ruin the flood control plan of NCC. The alignment revision may be permitted if its catchment area is kept same.

### 12.4.5 Regulation on Development

No development is allowed before the completion of a downstream drainage facility. However, if a proper drainage control (e.g. retention pond, dam, etc.) is done and it is proved that the development will not increase the water flow in the downstream area, the construction of the development is allowed.

### 12.4.6 Design Criteria

Design formula, such as runoff calculation, shall be based on DPWH Standard (DPWH, 2015, Design Guidelines, Criteria & Standards Volume 3 Water Engineering Projects).

Drainage design shall be based on 25 to 50-year return period, following Table 12.1.

- Return period of major drainage (river and retention pond which are categorized as Watershed in land use plan) shall be 100 year.
- Return period of minor drainage shall be
  1. Pipes - 25 year;
  2. Culverts - 50 year; and
  3. Open channel - 25 year

Table 12.1 Drainage Design Criteria

| Land Use (Note 1) | Minor System | | Major Drainage System Drainage Capacity (Note 2) |
|---|---|---|---|
| | Design Capacity | Check Capacity | |
| Drainage Pipes | 15 year flood | 25 year flood | 100 year flood |
| Culverts (Note 1) | 25 year flood | 50 year flood | |
| Esteros/ Creeks/ Drainage Channels | 15 year flood | 25 year flood | |

Note 1: Refer to Volume 4 for highway cross drainage capacities
Note 2: Freeboards for buildings are detailed in Volume 6: Public Buildings and Other Related Structures

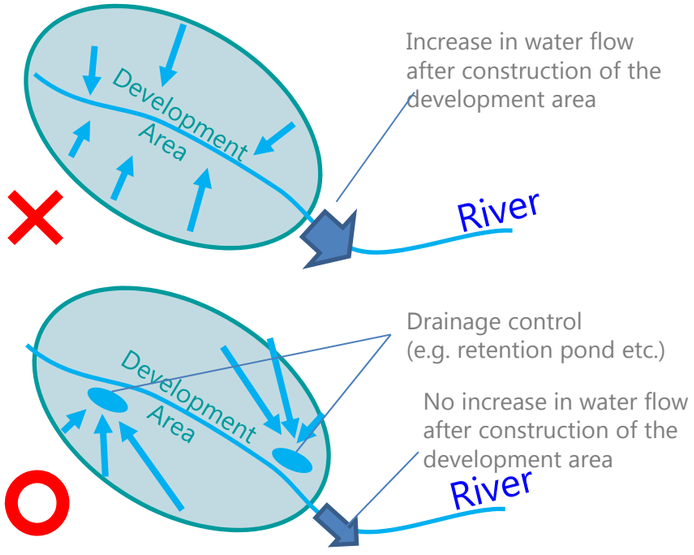
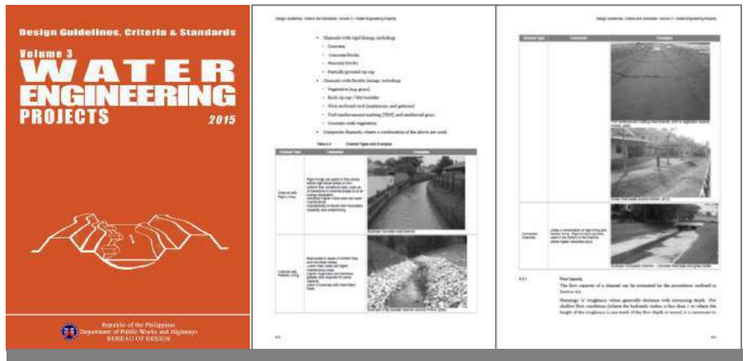



Fig. 12.2 Regulation on development

Drainage facility which reduces each development area's runoff

Fig. 12.3 Drainage Facility

Source: Abertay University




DPWH 2015 Volume 3

Fig. 12.4 DPWH 2015, Design Guidelines, Criteria & Standards

# 12.5 Solid Waste

### 12.5.1 General

The strategy for solid waste collection and disposal shall be compatible with the management plan of the Declarant.

### 12.5.2 Recycling

The Locator is required to comply with the recycling requirement and other requirements and guidelines of the Declarant regarding solid waste.

### 12.5.3 Garbage Collection Station

The Locator shall provide adequate areas within its land for garbage collection stations which have enough capacity for its residents. The following design criteria shall be considered:

- The size of a station shall be determined based on number of households and building types (i.e. single-family house or apartment)
- A station shall be located at the area which is easily accessible by a garbage truck.
- A station shall not be located at an area with traffic obstacles
- A station shall be kept sanitary

Garbage Collection Station

Fig. 12.5 Garbage Collection Station

Source: Girlschannel.net

# 12.6 Telecommunication

### 12.6.1 Design Criteria

It shall be the responsibility of the Locator to obtain design and construction criteria and building code's requirements from the appropriate government agency and service providers.

### 12.6.2 Telecommunication Component Space

The Locator shall provide a space to accommodate the telecommunications requirements of the service providers. The Locator shall provide reasonable access to this space.

### 12.6.3 Television Antenna

The Locator shall construct as an integrated component of the building, install, provide and maintain a communal television antenna on the roof of building constructed or to be constructed on the lot. No other individual television antennas shall be permitted to protrude from any part of any building constructed or to be constructed on the lot.

### 12.6.4 Cellular Phone Site

Any cellular phone sites constructed, installed or provided within a building to be constructed on the lot must secure the prior written endorsement of the Declarant.

# 12.7 Fuel Restriction

12.7.1 The Locator shall not use any fuel or store any fire hazardous materials on the lot or any part thereof or in any building or any part of any building constructed or to be constructed therein other than gas, liquefied petroleum gas, natural gas, kerosene or other conventional liquid fuel. Use of any other fuel or storage of fire hazardous materials shall require the prior written consent of Declarant.

# 12.8 Temporary Utilities

### 12.8.1 Responsibility

The supply and maintenance of temporary utilities within the lot required for the works shall be the responsibility of the Locator. The Locator shall remove all temporary utilities and services on completion of the works or when directed by the Declarant.

### 12.8.2 Arrangement by the Declarant

The Declarant may arrange for the utility supplies to be made available on site prior to the commencement of construction. In such instances, the Declarant shall provide a point of connection on or adjacent to the site. Subject to the approval of the Declarant, the Locator shall be responsible for connecting into this point of supply at his own cost. The cost of all the utility consumed shall also be for the account of the Locators.

### 12.8.3 Legal Issue on Water Use

The Locator will be allowed to use existing ground water well only when the Locator is likely to finish its development before whole NCC's water supply system is completed. However, the locator must use water supplied by the Declarant by paying designated fee after NCC's water supply system is completed.

### 12.8.4 Electricity

- Temporary electrical supply and distribution system including design, statutory approvals, connections and consents, fees, equipment, utility charges, cabling, and the like as required to complete the works.

- Temporary lighting supply and distribution system will be installed by the service provider as required to maintain a well-lit site during all hours of operation. The minimum levels of safety lighting as per the Philippine Code and guidelines must be provided at all times.

- Before finalizing arrangement for supply of temporary electricity, the Locator must submit, for the approval of the Declarant, any temporary overhead or underground routing of electricity cables which traverse NCC.

### 12.8.5 Sewage/ Drainage

Temporary sewage and surface water drainage to temporary accommodation and facilities will be installed in accordance with statutory approvals and consents. Any fees, utility charges will be to the account of the Locator. Pumps and devices to efficiently maintain the installation will be provided by the Locator.

# 12.9 District Cooling

12.9.1 The Declarant shall advocate a district cooling system, where applicable, especially in high density areas. This is recommended in view of the high energy conservation aspect of this technology.

SEA Games 2019 Facilities

Fig. 12.6 Temporary Utilities

Source: MTD

# 12.10 Liquefied Petroleum Gas

12.10.1 All plumbing and pipeworks of any building or buildings constructed or to be constructed on the plot shall be concealed accordingly. For gas pipe, concealment shall provide for free vent.

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# Chapter 13

# Transit Route Protection

# 13.2 Integrated Transit Development

13.2.1 All proposed developments adjacent to transit stations are subject to the guidelines on Transit Oriented Developments in Chapter 3.2.

13.2.2 Plots adjacent to transit stations are encouraged to be developed in integration with transit stations through maintaining a direct at grade, above grade or below grade connection between transit stations and buildings adjacent to it.

13.2.3 Integrated developments shall support intermodal connections, by facilitating transfers between multiple transport modes, such as rail, LRT/ BRT, bicycles, cars and/ or pedestrians, while prioritizing high levels of pedestrian and NMT access to the station.

13.2.4 A high intensity of mixed uses are encouraged within integrated developments to encourage high levels of transit use and provide a vibrant activity node for the community. Uses that generate high levels of pedestrian traffic are recommended along major pedestrian routes connecting to transit stations.

13.2.5 Amenities for transit users, such as pedestrian pathways, car parks, bicycle parking, wayfinding signages and other public furniture shall be provided within integrated developments.

13.2.6 Developments with the Central Business Zone (C3) and City Level Commercial Zone (C2) adjacent to transit stations are encouraged to provide a transit plaza connecting to the station to serve as a node for transit users and pedestrians, and to provide direct access to the ground level. This transit plaza shall be lined with ground level AGUs to ensure a high-quality environment. The provision of canopies over the transit plaza is encouraged to ensure pedestrians protection from the weather.

13.2.7 Buildings shall be developed as a podium-tower typology to achieve an appropriate street wall height that will help maintain a human scale for streets adjacent to transit stations while maximizing development density.

13.2.8 An example of how plots adjacent to transit stations may be developed is illustrated in the Section of Integrated Transit Development in Figure 13.2.

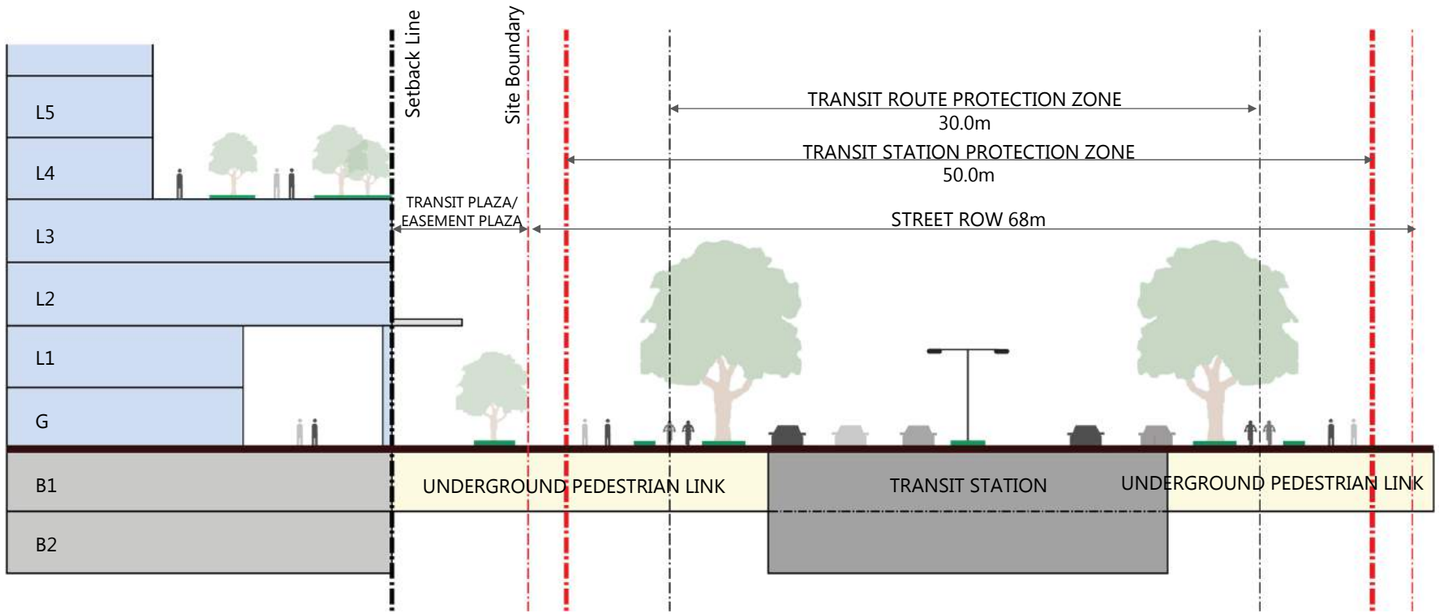



Fig. 13.2 Section of Integrated Transit Development


Transit Plazas with direct connection to underground transit station

Fig. 13.3 Section of Integrated Transit Development

Source: (1) Terri Meyer Boake (CTBUH); (2) Ion Orchard

# 13.3 Building Works

13.3.1 Prior to the commencement of any building works, details of the proposed works shall be submitted to the Declarant for written approval. Details submitted shall include, but not limited to, plans and sections detailing the works and showing their relative relationship to the transit route protection zone; specifications for the works; calculations detailing the stresses, ground deformations, ground water movements and vibration (both during execution and long term) that the proposed works shall impose within the reserve; proposed methods of execution; and all other details necessary for the determination of any possible impact that the proposed works may have upon existing or planned transit facilities.

13.3.2 Plans for proposed building works within the Transit Route Protection Zone shall be submitted to the Declarant. At the request of the Declarant and in order to protect the proposed transit system, any necessary protective measures shall be enforced by additional Design Standards and Guidelines.

13.3.3 The Declarant shall be entitled to reject proposal(s), which may be inconsistent with the existing or planned transit facilities, and require the Locator to modify and re-submit for approval any such plans.

13.3.4 No ground investigation, underground drainage and building works for any existing or planned building which are to be carried out in the Transit Route Protection Zone shall commence without the prior written approval by the Declarant.

13.3.5 The Declarant shall monitor settlement and vibration on transit structures where necessary. The Locator is required to inform the Declarant directly, prior to the commencement of any building works by his Contractor within the protection boundary, to enable them to plan a convenient monitoring program. In the event that any adverse situation becomes apparent the Declarant will alert interested parties, and a copy of such monitoring information prepared by the Declarant may be made available to the Locator and/ or his Contractor.

13.3.6 Any other necessary monitoring within the building site (e.g. monitoring of piezometric change) will be carried out by the Locator at his own cost. The Locator shall keep the Declarant informed of the monitoring records as necessary. The Declarant, through its authorized representative, may enter any building within the Transit Route Protection Zone for the purpose of monitoring construction.

13.3.7 There shall be no building openings such as windows, doorways, building ventilation system intake or exhaust and the like, within 5 meters from the opening of any transit vent shaft, irrespective of whether such a vent shaft is free-standing or is accommodated in a building. This distance may be reduced to 2.5 meters, provided that the exhaust air from the transit vent shaft is directed away from and is not likely to affect the opening by natural convection.

# Chapter 14

# Construction

# 14.1 Introduction

14.1.1 These construction guidelines are a supplement to the existing National Building Code which must be fully complied with in addition to the guidelines stated within this document.

14.1.2 All construction within NCC shall likewise be guided by rules and regulations as may be promulgated from time to time.

14.1.3 The site management responsibilities of the Locators for purposes of these guidelines are broken into three (3) general areas concerning Site Logistics, Site Services, Site Security and Safety.

14.1.4 Any survey works shall be in accordance with the guidelines set by the declarant.

# 14.2 Site Logistics

14.2.1 Within each contract work area the Locator is responsible for all operations and logistics activities. Each Locator shall provide a logistics plan describing the overall site facilities and services that he will be establishing and the operational strategy that will be followed to ensure that the construction works proceed smoothly and safely, with minimum impact on the surrounding areas. The Locator's logistics plan shall be submitted to the Declarant at least thirty (30) days prior to commencement of work and will require the Declarant's written permission before commencement of the works.

14.2.2 Each Locator shall take into account adjacent concurrent works to coordinate his activities with that being undertaken by the other Locator and allow reasonable access for the other Locator.

14.2.3 Each Locator shall designate a logistics manager who will coordinate with the Declarant and others. The logistics manager may be required to attend regular logistics coordination meetings as may be determined by the Declarant.

14.2.4 To avoid site congestion there will be a need to avoid certain access routes to NCC. Access for contractors' deliveries will be determined by the Declarant.

14.2.5 The Locator shall make provisions for all necessary control and guidance to visitors to the work site to ensure their protection and, where necessary, provide safety equipment for their use.

14.2.6 The Locator shall submit weekly schedules in advance of anticipated deliveries of materials and equipment to the Declarant. The Declarant will provide the Locator with a schedule of authorized access routes which must be strictly adhered to.

14.2.7 Deliveries not booked in may be denied access to the site.

14.2.8 In addition to Chapters 14.2.6, all deliveries of abnormal loads, such as cranes, must be included and highlighted in the booking system, at a minimum of 48 hours in advance of delivery. The Locator must consult the Declarant to check that access routes to the required site location will be available and that the proposed unloading location and possible crane positioning does not interfere with another Locator's work.

14.2.9 The Locator shall submit a crane layout plan to the Declarant for approval prior to erecting any crane on site. Any 'over sailing' of cranes over adjacent sites must be agreed with the adjacent Locator before erection. The 'over sailing' by cranes over roads will be controlled and approved by the Declarant. The Declarant will consider each circumstance on its merit, taking into account the degree of 'over sailing' proposed, the state of development of adjacent properties and visual intrusion.

14.2.10 All vehicles leaving the site shall ensure that their vehicles, especially wheels, are clean before proceeding onto the public roads. Wash bays are to be provided and situated within the Locator's lot. Locator shall be responsible for the clearance of all debris caused by his failure to adhere to this Chapter.

14.2.11 If judged necessary as a result of forecast or actual density of deliveries, the Declarant may provide a Truck Holding Area where vehicles delivering to the site will proceed and from where they will be called forward to site.

14.2.12 All vehicles must be parked in the designated parking areas. Illegally parked vehicles will be towed away and will be liable for a recovery charge.

14.2.13 Locator will not be permitted to establish ready-mix plants on their site unless approved by the Declarant.

14.2.14 The locator shall submit plans of temporary batching plants and worker's dormitories to the Declarant for approval.

14.2.15 The Locator shall provide temporary protection for all installations or construction, whether or not completed outside his property or protected easements as required to maintain existing works, existing services and service connection and finished works in an undamaged condition.

# 14.3 Services

14.3.1 Each Locator shall be responsible for the provision of his own site services.

14.3.2 No site accommodation will be permitted on the site unless approved in writing by the Declarant.

14.3.3 The supply and maintenance of respective office and welfare facilities will be the responsibility of the Locator. These shall include, but are not limited to, the following:

a. Canteen/ food facilities suitable to handle staff and worker population.

b. Toilet and welfare facilities suitable to handle staff and worker population.

c. Provision of sewage and waste disposal facilities from all toilets, canteens, offices, and any other welfare accommodation provided. It will not be possible to connect to the Declarant's sewage network until a later stage and until this connection is available, the Locator shall provide sewage holding tanks and arrange for these tanks to be pumped out to road tankers at regular and frequent intervals. The Locator is responsible for satisfying the Declarant and appropriate authorities that sewage disposal arrangements fully comply with current legal and environment requirements.

d. Provision and operation of a fully equipped first aid station with a qualified nurse in attendance during working hours.

# 14.3 Services

14.3.4 On completion of the works the Locator shall remove all temporary accommodations and facilities from his site within 14 calendar days of completion. Failure to do so entitles the Declarant to undertake the removal of the temporary facilities without prejudice to loss, penalty charges or legal suits.

14.3.5 The Locator shall maintain the site to a high standard of cleanliness at all times.

14.3.6 In the event that a Locator delays construction of his site, the site shall be maintained in a tidy condition, grass trimmed and excessive vegetation growth cut back. Failure of a Locator to comply with this requirement will result in the Declarant executing this work at the expense of the Locator.

14.3.7 The Locator shall at all times comply with current statutory and municipal regulations and requirements for the disposal of rubbish and waste.

14.3.8 The Locator shall provide rodent and pest control services including spraying/ fogging for insect control to all areas of the their site and adjacent boundaries as may be deemed necessary.

# 14.4 Site Security and Safety

14.4.1 The Locator shall be responsible for making his own security arrangements. The Declarant has no responsibility for any loss of property from any private lot.

14.4.2 The Locator, his contractors and sub-contractors must follow the Design Standards and Guidelines and guidelines of the Safety Organization of the Philippines (SOPI) and the National Building Code. The Locator must provide the Declarant with a copy of their safety policy, the organization, and the arrangements for implementing the policy prior to the commencement of works on site.

14.4.3 The Locator must conform to the Philippine Government regulations and the Declarant's environmental policy and comply with the requirements of its aims regarding good neighbor policy and environmental degradation control. Any environmental incidents are to be reported to the Declarant.

14.4.4 Prior to the commencement of any work on site, the Locator must submit to the Declarant a written plan to handle emergencies. This plan must be posted in the work place and must address the following areas:

a. Safe shutdown of all work activities.

b. Detailed instructions for the notification of the proper representatives and authorities (including phone numbers, etc.).

c. Listing of individuals responsible for the organization and control of emergency conditions.

d. Communication plan to ensure all the site personnel are aware of the correct response in an emergency.

e. Typhoon precautions and procedures.

f. Contractors and sub-contractors must provide their employees ID tags that must be displayed at all times.

14.4.5 All accidents occurring on site must be reported by the Locator to the Declarant and appropriate government authorities immediately. The Locator shall complete an interim Incident Report Form for each accident/ incident. A copy of the full report must be given to the Declarant within 24 hours.

14.4.6 All accidents/ incidents which occur on site are to be investigated by the Locator concerned. The investigation shall cover what went wrong and ways in which work practices can be improved to avoid such an accident/ incident in the future. In all major investigations, a representative of the Declarant and appropriate government authorities are to be present.

14.4.7 Major incidents or fatalities may result in the Declarant requiring the Locator to close the site.

# Chapter 15

# Fire Protection

# 15.1 Fire Protection

15.1.1 The Locator shall comply with the rules and regulations of the National Building and Fire Codes, the Declaration of Covenants, Conditions and Restrictions, these Design Standards and Guidelines relative to fire protection systems within the building, exterior connection for fire department equipment and required water storage for fire fighting.

15.1.2 The Locator shall provision for fire lanes within his property, as necessary, to provide access at all times to the fire department equipment. Locator shall make provision for telecommunication connection of the building's fire protection systems to the local municipality fire department communication center.

15.1.3 The Locator shall at all times permit the fire department of his representative to enter the building premises to conduct inspection and testing of the building's fire protection systems. In addition, the Declarant, shall as it deems necessary, conduct visual review of the building's fire protection systems and issue written notice to the Locator, copy furnish the fire department, of observed non-compliance to the National Fire Code.

15.1.4 Temporary fire detection and alarm system must be provided to temporary accommodation and facilities required to provide life safety warning as part of construction of buildings.

15.1.5 The safe and proper storage of flammable materials and liquids on site will be in accordance with the National Building Code and Fire Code.

15.1.6 The Locator shall maintain adequate insurance to indemnify the Declarant against claims for fire damage how so ever caused to third parties.

# 15.2 Emergency Access

15.2.1 Emergency exit doors when open must not project beyond the property line. The design of the exit is subject to building, fire and other relevant codes and guidelines.

15.2.2 Exist areas shall be designed with flared or bevelled corners, angle inset or with similar details in order to avoid an enclosed and box-like appearance. The doors shall be designed and decorated so as to blend with the overall design and character of the building.

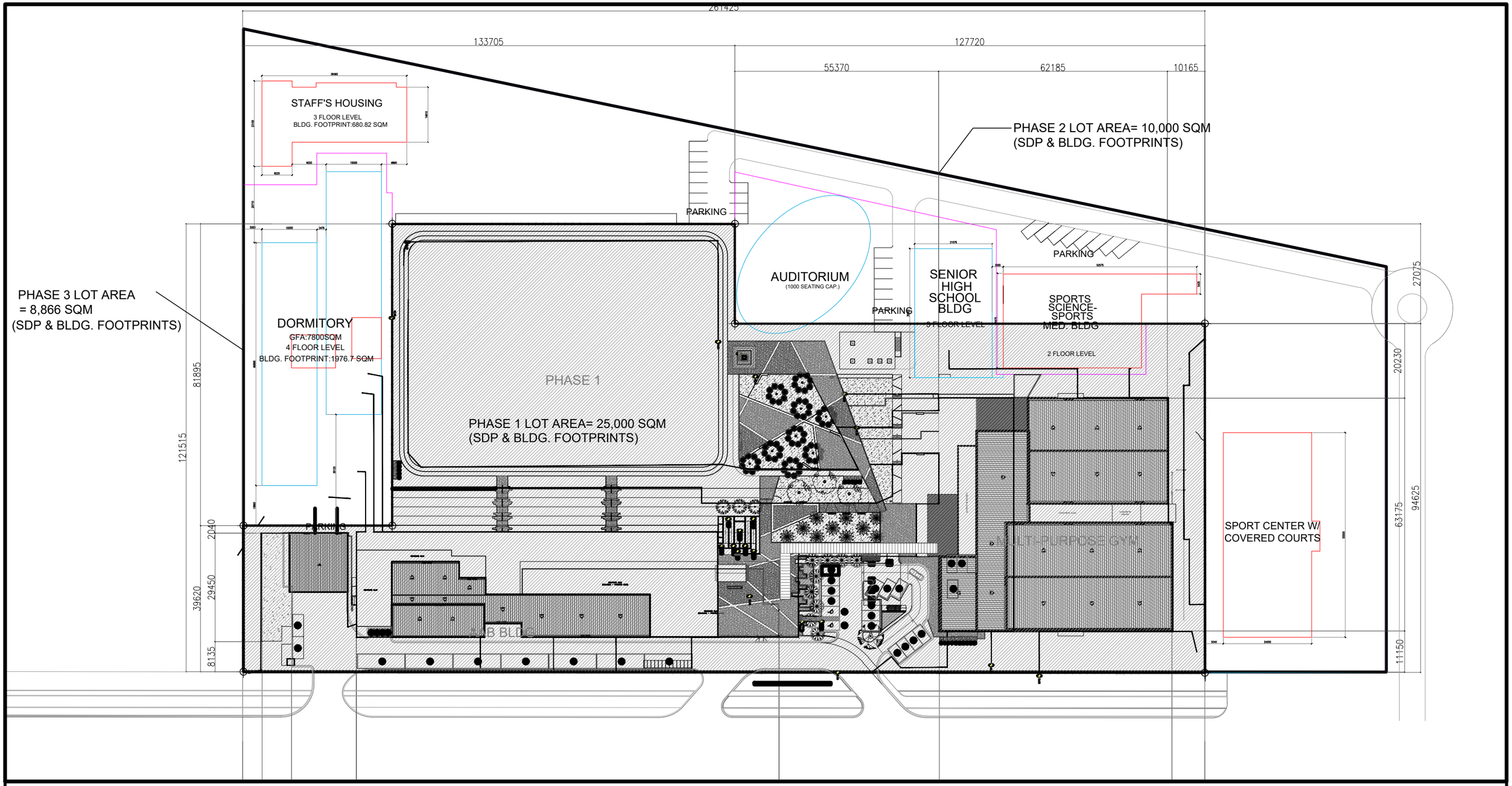
15.2.3 Service access points for garbage trucks, etc., must be located away from the emergency exit areas.

building cities
shaping lives

**Surbana Jurong Consultants Pte Ltd**
168 Jalan Bukit Merah
#01-01 Connection One
Singapore 150168
www.surbanajurong.com

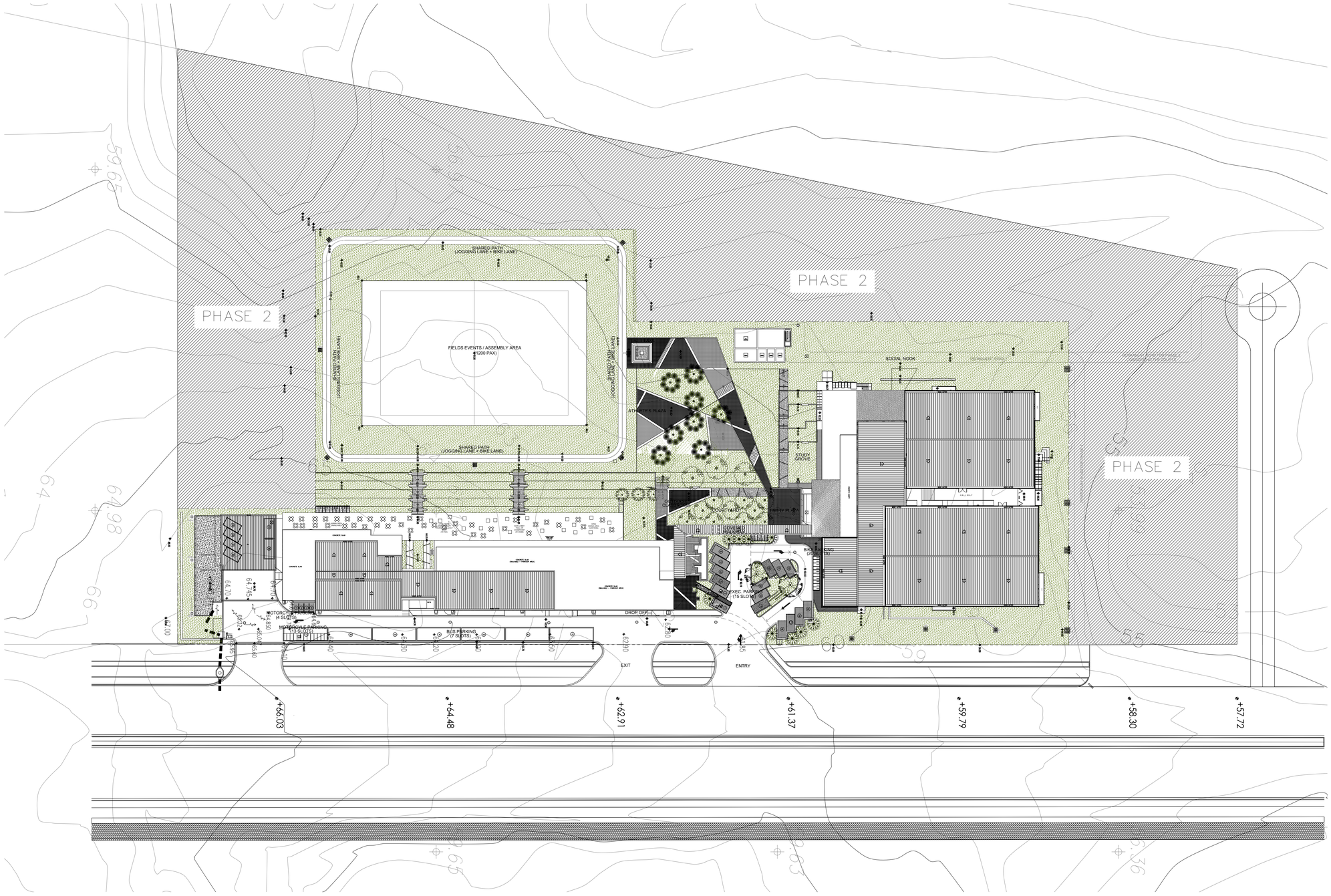
Section IV.

# National Academy of Sports Site Development Plan and Conceptual Plans




1 / A-1.00 PROPOSED SCHEMATIC SITE DEVELOPMENT PLAN -P2 & P3
SCALE 1:1000M

| | PROJECT TITLE | REVISIONS: | | | | | SHEET NO. |
|---|---|---|---|---|---|---|---|
| | | No. | Description | Date | Checked | Authorized | A-R2-1.00 |
| | NATIONAL ACADEMY OF SPORTS (SDP) | | | | | | Drawn By: TGC |
| | | | | | | | Checked By: |
| | LOCATION: NCC, MUNICIPALITY OF CAPAS, TARLAC | | | | | | Date : JULY 31, 2022 |




P-1 LANDSCAPE SITE DEVELOPMENT PLAN

LA0-02-01 SCALE 1:600 METERS

| APPROVED BY: | CHECKED BY: | PREPARED BY: | PROJECT TITLE | SHEET CONTENTS | SHEET NO. |
|---|---|---|---|---|---|
| BCDA Bases Conversion and Development Authority<br>RYAN S. GALURA<br>OIC, SPMD<br>AND<br>NATIONAL ACADEMY OF SPORTS PHILIPPINES, EST. 2020<br>JOSEPHINE JOY REYES<br>EXECUTIVE DIRECTOR | FILIPINAS DRAVO CORPORATION<br>Consulting Engineering & Architectural Services<br>SALVADOR D. PALISOC<br>PROJECT MANAGER | HILMARC'S CONSTRUCTION CORPORATION<br>1835 E. RODRIGUEZ SR. AVENUE, IMMACULATE CONCEPTION QUEZON CITY, 1111<br>TEL. NO. 8654-3911<br>JESUS V. HERBAS<br>PROJECT MANAGER | AS-BUILT DRAWING<br>NATIONAL ACADEMY OF SPORTS<br>PHASE 1<br>(LANDSCAPE)<br>LOCATION: NCC, MUNICIPALITY OF CAPAS, TARLAC | LANDSCAPE SITE DEVELOPMENT PLAN | LA0-02-01 |

# National Academy of Sports
# Phase 2

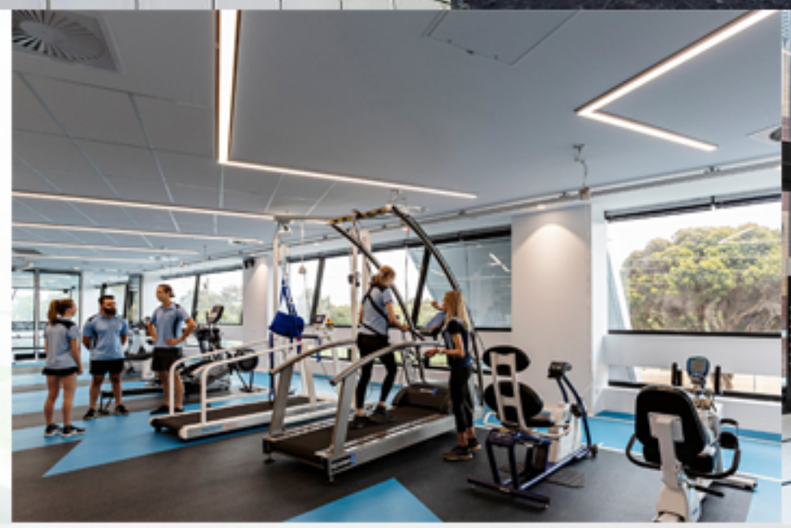
## Conceptual Plans

# Sports Science and Sports Medicine Building

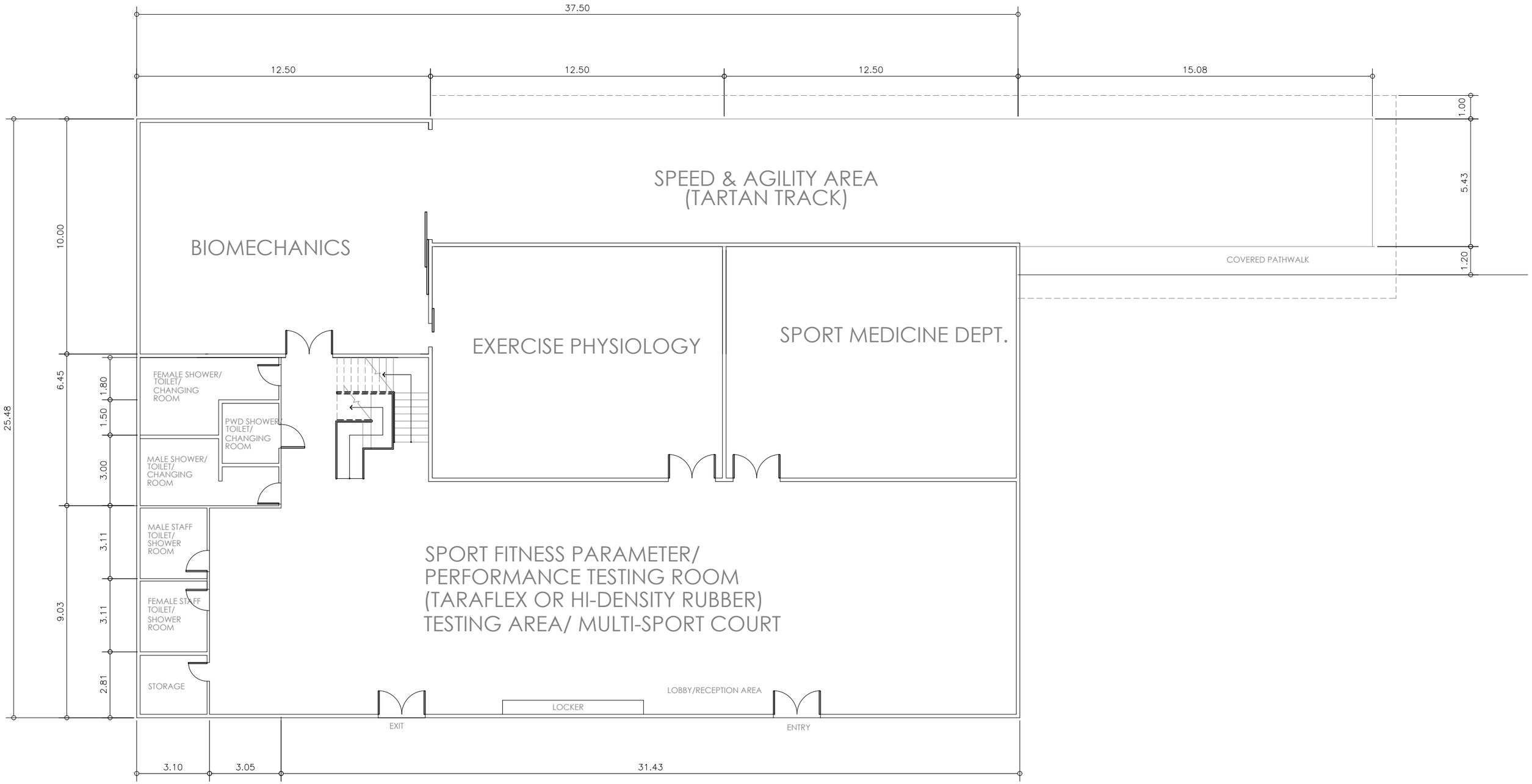
# DESIGN INSPIRATION

ADVANCED & FUTURISTIC DESIGN WHICH PROMOTES MOVEMENTS AND

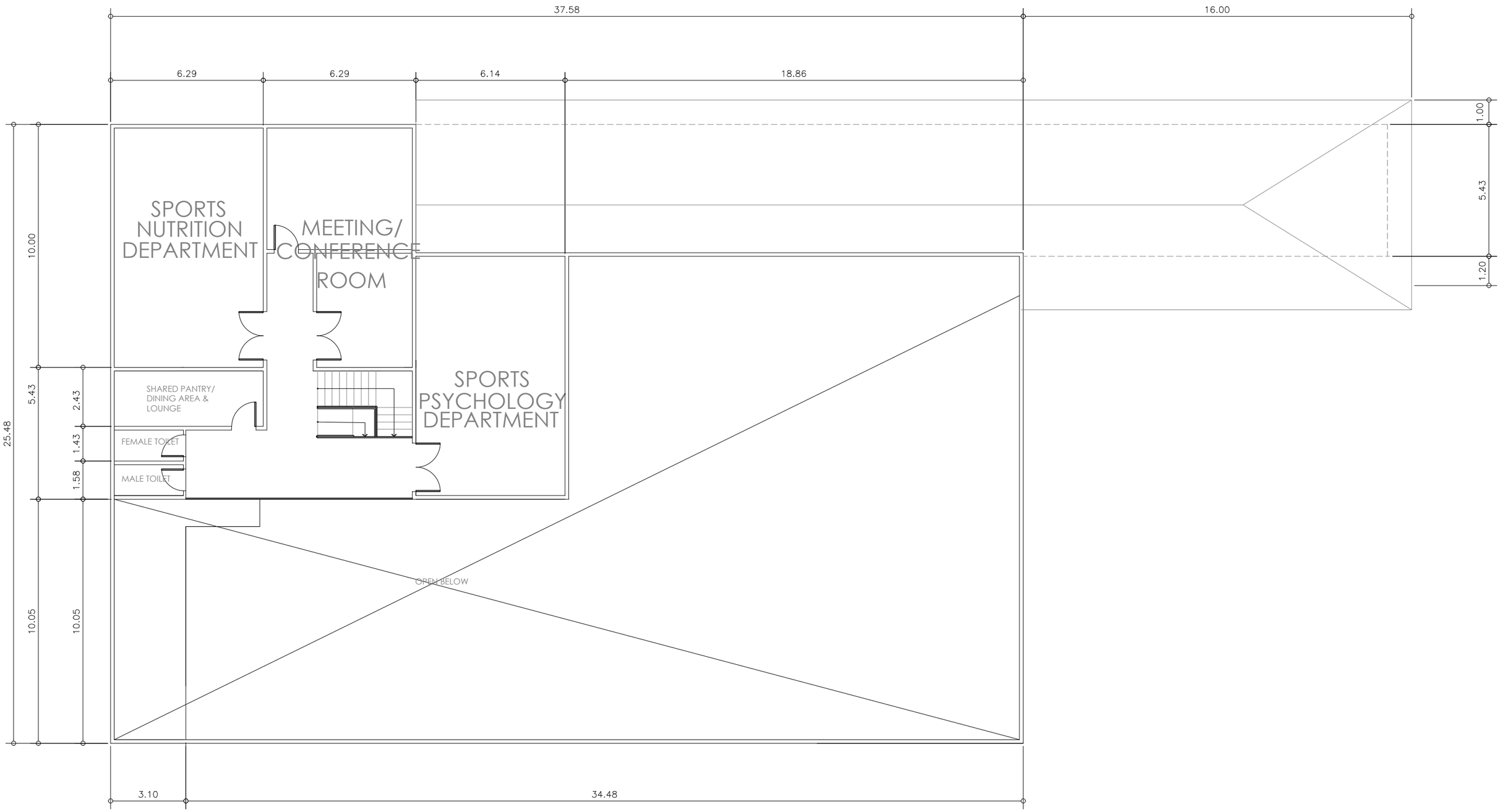
TINTED GLASS WINDOWS TO CONTROL SOLAR HEAT GAIN & GLARE



## SPORT SCIENCE & MEDICINE BUILDING




# SPORT SCIENCE BUILDING GROUND FLOOR




# SPORT SCIENCE BUILDING SECOND FLOOR

# Additional Sports Facility

# DESIGN INSPIRATION

SUSTAINABILITY

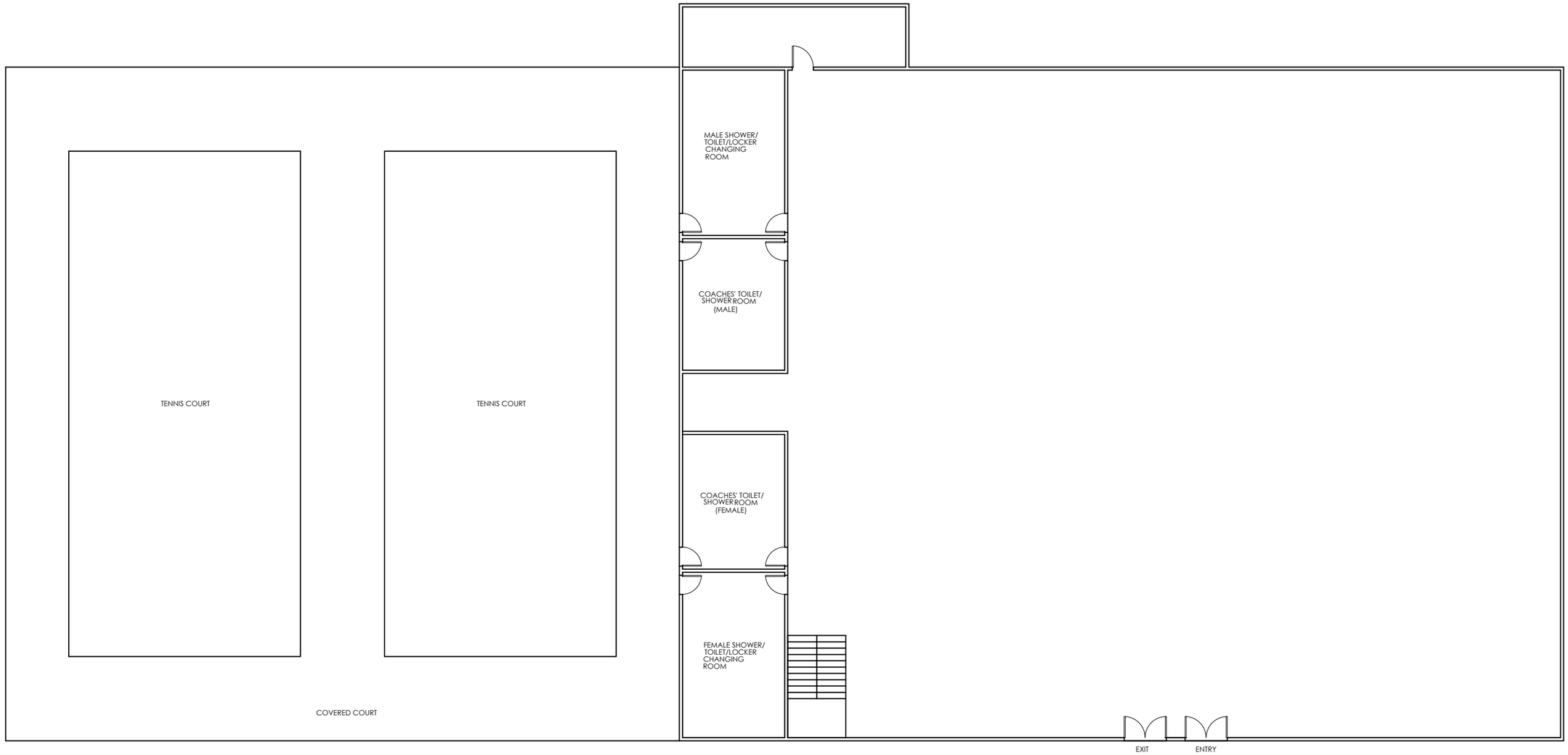
SAME DESIGN AND FINISHES WITH MULTI-PURPOSE GYM TO SHOWCASE MODERN FILIPINO SENSIBILITY SUITED TO FUTURE CHAMPIONS

PRACTICAL LUXURY

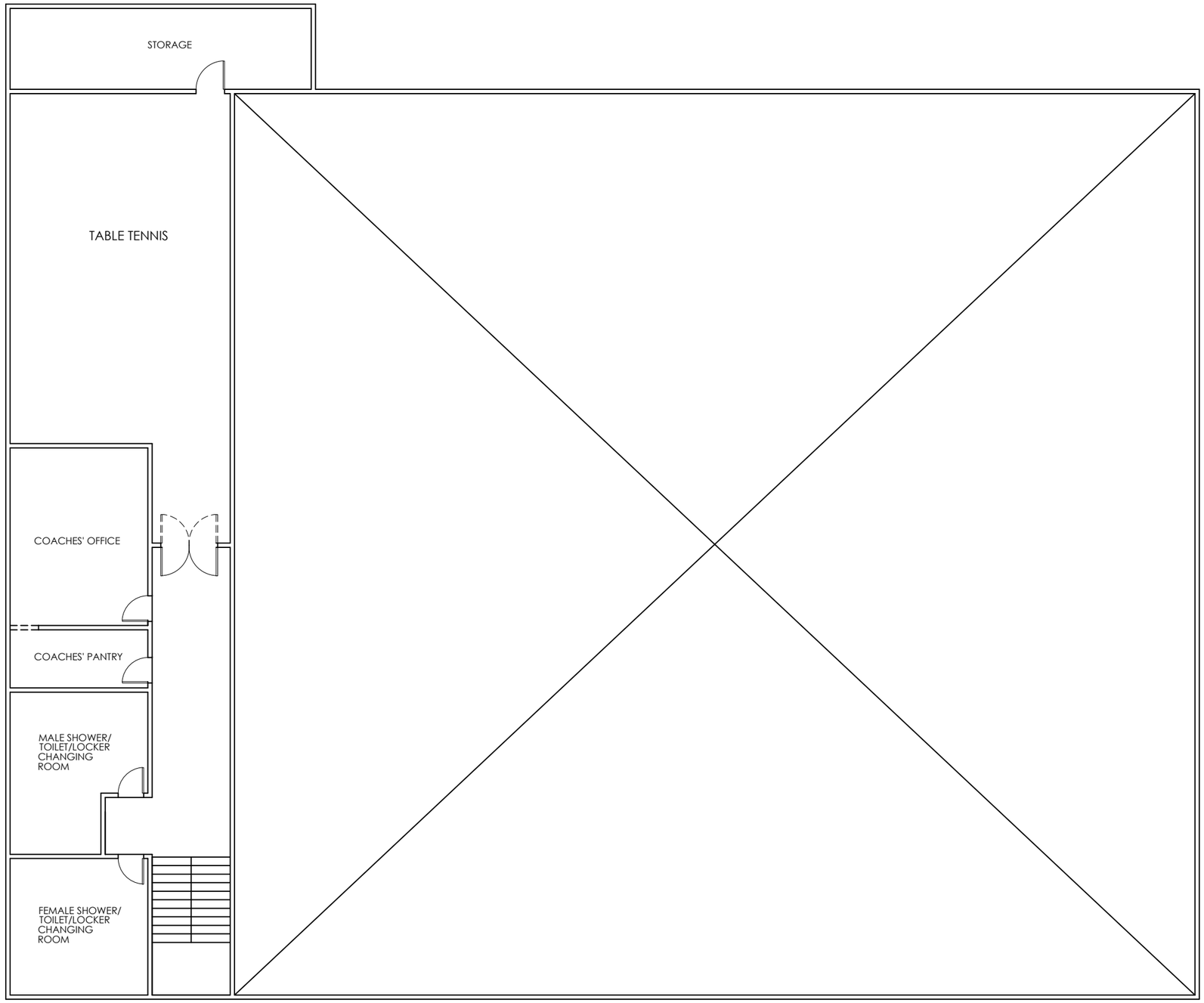
TINTED GLASS WINDOWS TO CONTROL SOLAR HEAT GAIN & GLARE

COST-EFFICIENCY

# MULTI-SPORTS BUILDING




# SPORT CENTER GROUND FLOOR



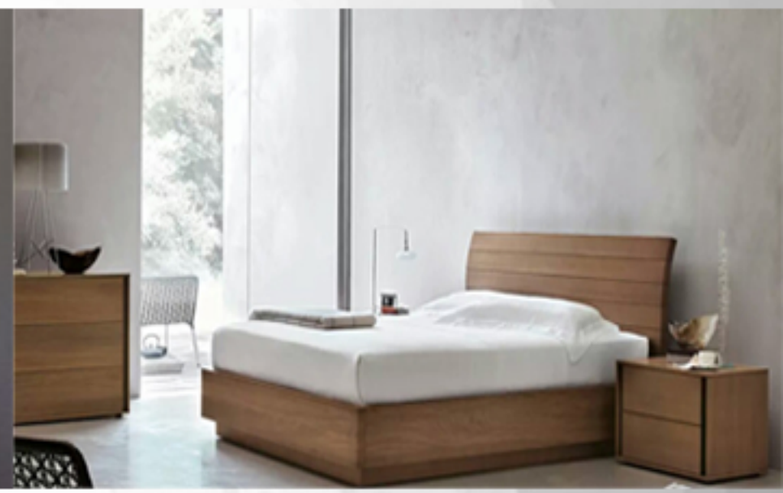

SPORT CENTER MEZZANINE FLOOR

# Staff Housing

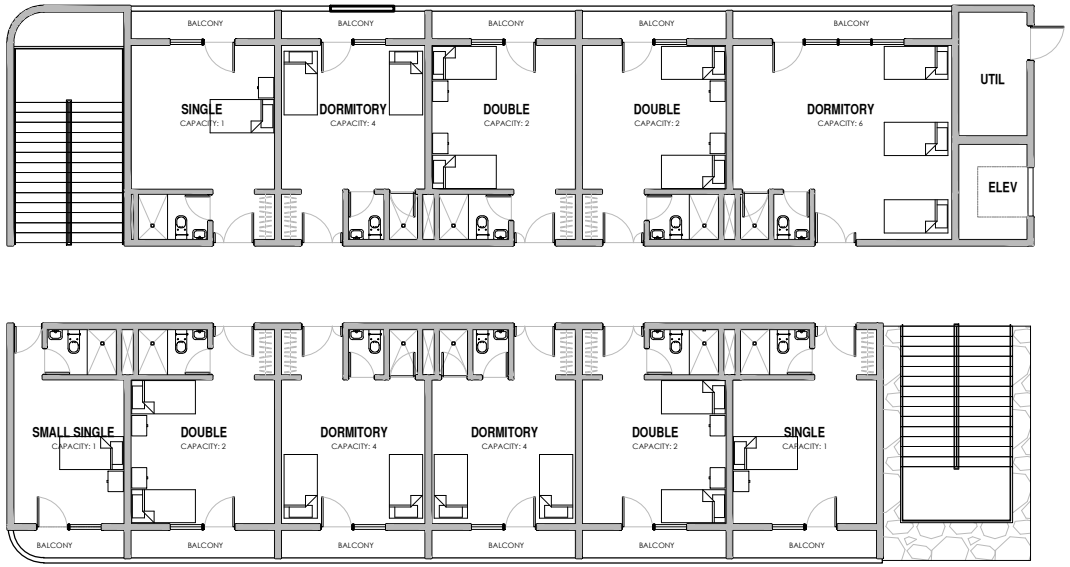
# DESIGN INSPIRATION

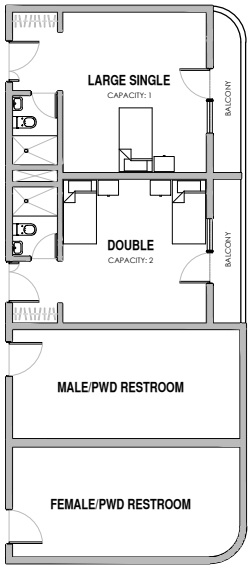
*TROPICAL & RELAXING DESIGN FOR USERS COMFORTABILITY WITH PROPER VENTILATION AND NATURAL LIGHTING.*

*>MAXIMIZE SPACE*
*> ADMIN OFFICE, DINING AREA W/ KITCHEN/PREP. AREA, LANDRY AREA, COMMON SPACE, STUDIO UNIT, SHARED UNIT, AND GREEN SPACE/ DESIGN.*

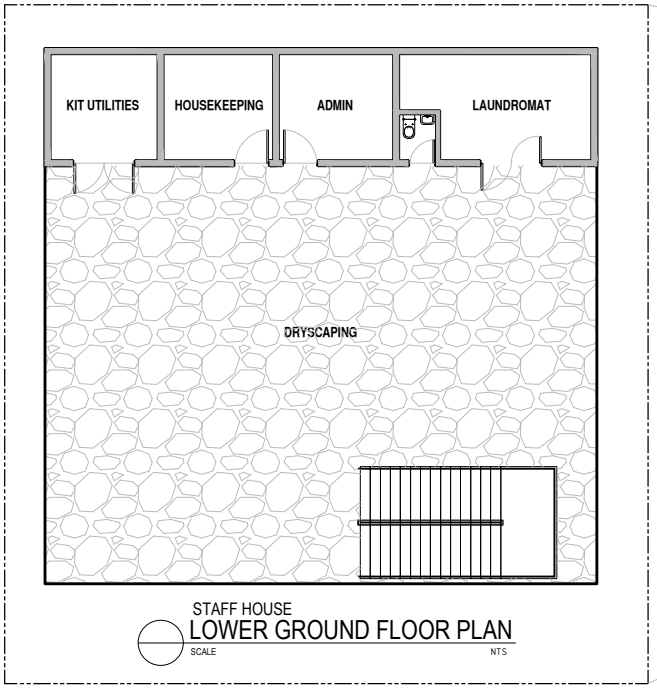


## STAFF HOUSING

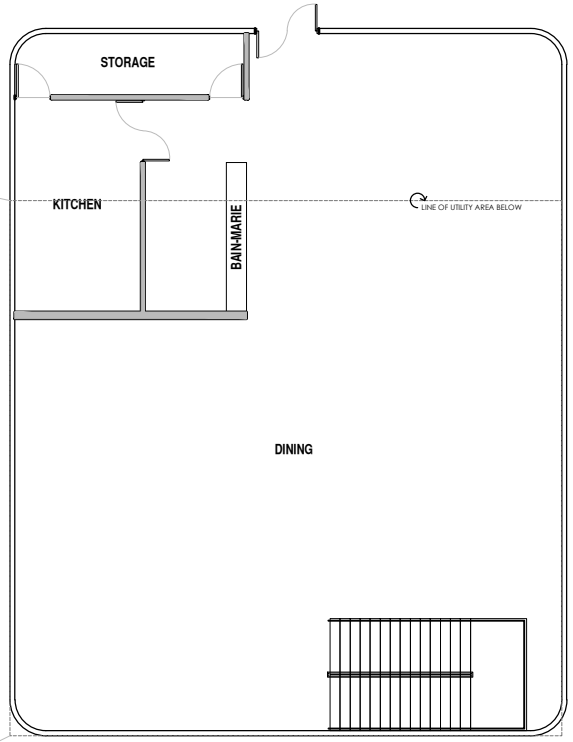




STAFF HOUSE
## UPPER GROUND FLOOR PLAN
SCALE NTS




STAFF HOUSE
## LOWER GROUND FLOOR PLAN
SCALE NTS




STAFF HOUSE

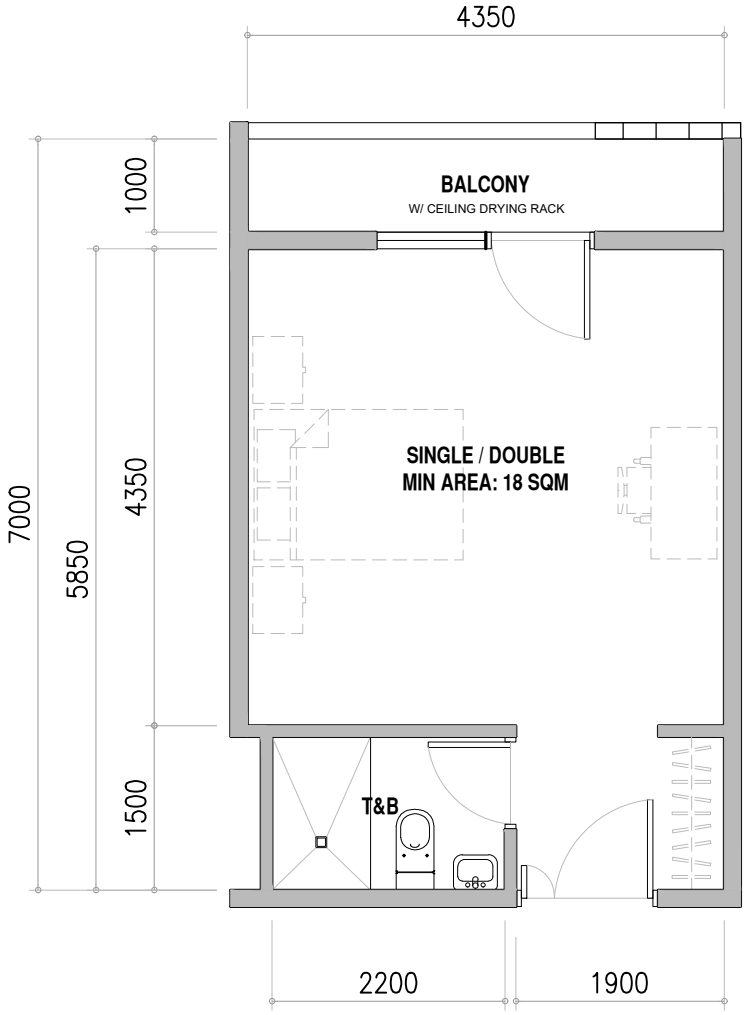
## SECOND FLOOR PLAN

SCALE NTS

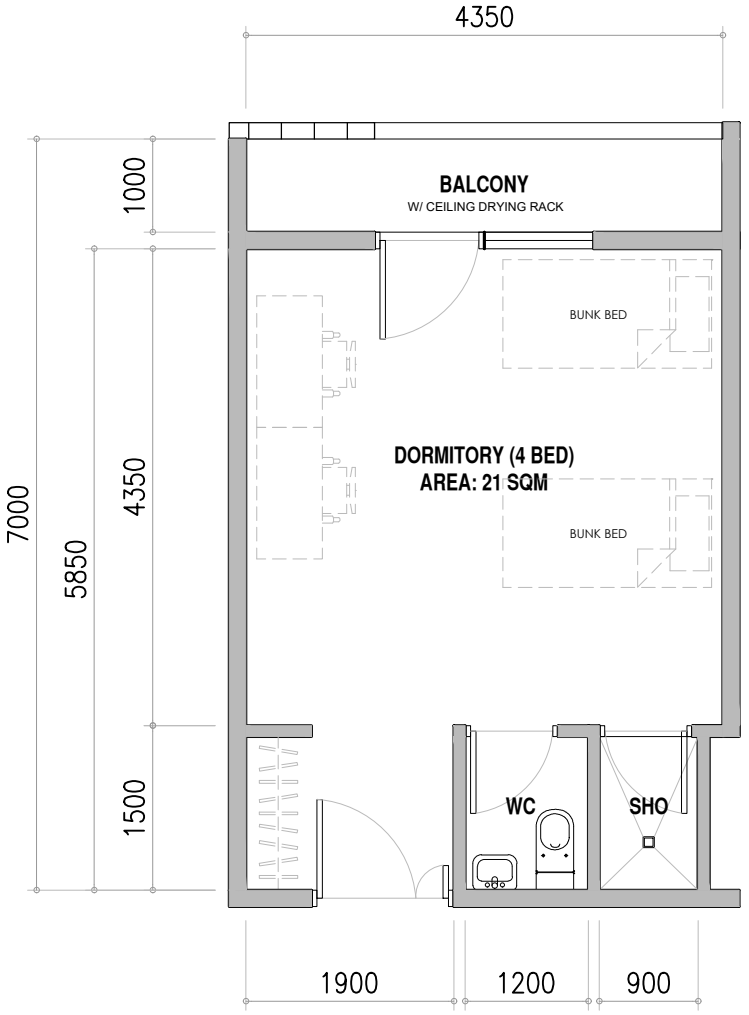

STAFF HOUSE

## THIRD FLOOR PLAN

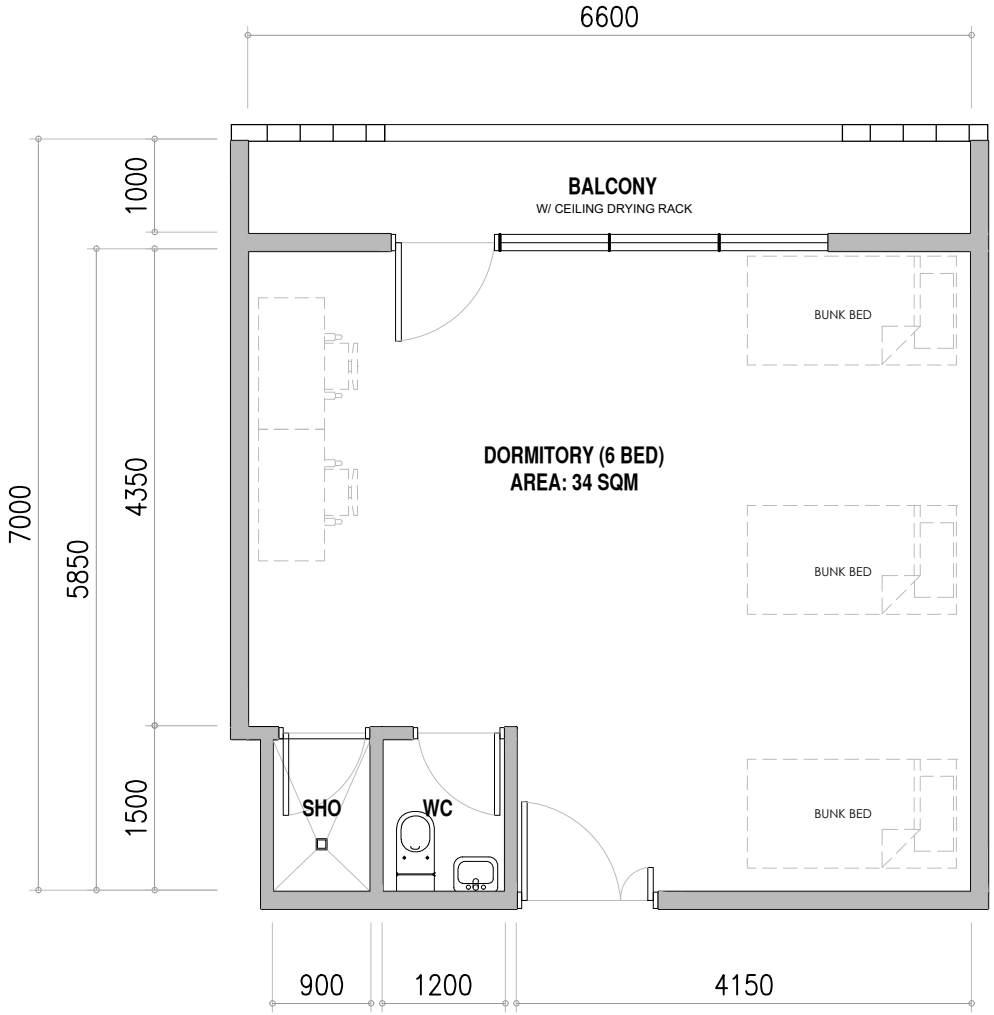
SCALE NTS




BLOW UP
## TYPICAL SINGLE/DOUBLE ROOM
SCALE NTS




BLOW UP
## TYPICAL 4 BED DORM
SCALE NTS




BLOW UP

# TYPICAL 6 BED DORM

SCALE NTS

Section V.

# Sports Science and Sports Medicine Equipment Technical Specifications

# Technical Specifications for Sports Science and Sports Medicine

Bidders must indicate whether the goods and equipment offered are “Compliant” or “Non-Compliant” to the corresponding specifications prescribed by BCDA using this form.

| BIDDING FOR THE SUPPLY, DELIVERY, AND INSTALLATION OF SPORTS SCIENCE AND SPORTS MEDICINE EQUIPMENT FOR THE NATIONAL ACADEMY OF SPORTS (NAS) - PHASE 2 AT NEW CLARK CITY | | | | | |
|---|---|---|---|---|---|
| **TECHNICAL SPECIFICATIONS COMPLIANCE FORM** | | | | | |
| **NO.** | **QTY** | **UNIT** | **SPECIFICATIONS** | **COMPLIANCE** | |
| | | | | **Compliant** | **Non-compliant** |
| ***SPORTS SCIENCE & SPORTS MEDICINE*** | | | | | |
| **1.A** | | | **Biomechanics** | | |
| **1** | **2** | **sets** | **Timing Gates** | | |
| | | | A. Bluetooth: LE4.0 – FCC/CE Certified / Can be paired w/ any Tablet | | |
| | | | B. Batteries: 2 x 3.7V 3600mah Lithium Ion batteries | | |
| | | | C. Optical Laser Sensors: 640nM modulated visible red laser Class 3R | | |
| | | | D. 6 timing Gates / 3 pairs of gates with tripod | | |
| | | | E. Tablet included | | |
| **2** | **1** | **nos** | **Portable Force Platform** | | |
| | | | A. Size: 605 x 360 x 070mm | | |
| | | | B. Weight: 13-20 kg | | |
| | | | C. Battery: Li-ion 6000mA.h 3.75V | | |
| | | | D. Battery Life: at least 9 hrs | | |
| | | | E. Tablet included | | |
| | | | F.. At least 20 kN load capacity | | |
| | | | G.. 3-year Software License or yearly / Subscription based software | | |
| **3** | **1** | **nos** | **Contact/Jump Mat** | | |
| | | | A. Weight: 15-25 kg | | |
| | | | B. Area: 500-800mm x 500-800mm | | |
| | | | C. Wireless Charger | | |
| | | | D. 3-year license for unilateral leg measure | | |
| | | | E. Tablet included | | |
| **4** | **1** | **nos** | **Electromyography System** | | |
| | | | A. 16 probes Surface electrodes: Variable geometry electrodes with snap connectors | | |
| | | | B. Acquisition Frequency: 1Khz | | |
| | | | C. Data transmission: Wireless IEEE 802.15.4 | | |
| | | | D. Battery: LiPo battery, rechargeable with proprietary charger | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | H. EMG analysis software | | |
| **5** | **2** | **nos** | **Sleep, Physical Activity Monitoring Kit** | | |
| | | | A. 50 pcs Lightweight accelerometers (16g/piece) | | |
| | | | B. Memory: 512Mb flash non-volatile | | |
| | | | C. Wrist band: Adjustable size 140-217mm; Lightweight (16g) | | |
| | | | D. Data transfer dock (5 units) | | |
| | | | E. Compatible with Open Software | | |
| **6** | **10** | **nos** | **High Resolution Camera** | | |
| | | | A. Photo : 23MP | | |
| | | | B. 5.3K: 60fps | | |
| | | | C. 4K: 120fps | | |
| | | | D. Video stabalisation: HyperSmooth 4.0 | | |
| | | | E. LCD: Front and Rear (Touch screen) | | |
| | | | F. Battery: Removable 1720mAh Lithium-Ion | | |
| | | | G. Waterproof: 33ft (10m) | | |
| **7** | **2** | **nos** | **Handgrip Dynamometer** | | |
| | | | A. Dual-Scale Readout - Our Dynamometer displays grip force in pounds (200lbs max) and kilograms (90kg max). | | |
| | | | B. Peak-Hold Needle - For convenience and easy recording, the Hand Dynamometer automatically retains the highest reading on a special peak-hold needle. This reading remains on the gauge until the examiner resets it. | | |
| | | | C. Adjustable Handle - To accommodate various size hands, the Hand Dynamometer handle adjusts to five grip positions: from 1 3/8 to 3 3/8 inches, in half-inch increments | | |
| | | | D. Hydraulic type | | |
| **1.B** | | | **Exercise Physiology** | | |
| **8** | **1** | **nos** | **Bioelectrical Impedance Analyzer for Body Composition** | | |
| | | | A. Frequencies: 1, 5, 50, 250, 500, 1000 kHz | | |
| | | | B. Measurements: 30 impedance measurements 6 frequencies at each of the 5 segments (Right Arm, Left Arm, Trunk, Right Leg, Left Leg) | | |
| | | | C. Technology - Direct Segmental Multi-frequency Bioelectrical Impedance Analysis Method, DSM-BIA Type | | |
| | | | D. Body Composition Calculation | | |
| | | | E. Outputs (LCD Screen) - Weight, Body Fat (Percent Body Fat), Muscle (Skeletal Muscle Mass), BMI | | |
| | | | F. Total Test Time - 15 seconds | | |
| | | | G. User Weight Range - 22 ~ 550 lbs (10 ~ 250 kg) | | |
| | | | H. Height Range - 3 ft. 1.4 in. ~ 7 ft. 2.61 in. (95-220 cm) | | |
| | | | I. 8-Contact pts : 2 per hand/2 per foot | | |
| | | | J. Includes stadiometer and printer | | |
| **9** | **2** | **nos** | **Cycle Ergometer** | | |
| | | | A. Adjustable saddle and handlebar | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | B. Electronic meter with heart rate | | |
| | | | C. Width - 517 mm (20 1/3”) at handlebar, 640 mm (25”) at support tubes | | |
| | | | D. Length - 1120 mm (48 4/5") | | |
| | | | E. Height - 945-1295 mm (37-51”) at handlebar, 780-1105 mm (31-43½”) at seat | | |
| | | | F. Weight - 65 kg / 143 lbs (without weights) | | |
| | | | G. Max user weight - 125 kg (275 lbs) | | |
| | | | H. Includes Chest belt, PC software, Power adaptor, Weight kit consisting of: 4 pcs. 0.1 kg (0.2 lbs), 1 pcs. 0.5 kg (1.1 lbs), 8 pcs. 1.0 kg (2.2 lbs) | | |
| | | | I. Output voltage: +9 V DC | | |
| | | | J. Current: 500 mA | | |
| **10** | **1** | **nos** | **Treadmill for CLINICAL/RESEARCH LAB** | | |
| | | | A. Running surface length - Range: 170cm-200cm | | |
| | | | B. Width -Range: 65cm-100cm | | |
| | | | C. Weight (Kg) - 390 | | |
| | | | D. Speed - 40kph or more | | |
| | | | E. Elevation Range - 25-40% | | |
| | | | G. Downhill (w/ reverse belt) - Decline range: 5%-25% | | |
| | | | H. Maximum Patient Weight (kg) - 200 | | |
| | | | I. With overhead tubular bars with safety harness | | |
| **11** | **1** | **nos** | **Portable Gas/VO2 Analyzer** | | |
| | | | A. Oxygen Gas Analyzer : GFC<br>B. CO2 Gas Anlayzer: NDIR<br>C. Power Supply - Medical grade 100-240 AC/DC adapter for direct power supply and battery charging<br>D. Battery - Rechargeable Li-Ion 7.2V, 3100 mAh, “Smart battery” w/ LCD charge status - 4 hours autonomy, user replaceable<br>E. CPU 456 MHz w/ 128MB RAM | | |
| **12** | **30** | **nos** | **Physiological Monitoring System** | | |
| | | | A. Bluetooth Connectivity to receiver or external sensors | | |
| | | | B. 802.15.4 Connectivity | | |
| | | | C. Heart Rate 0 – 240 BPM (±1 BPM) | | |
| | | | D. Breathing Rate 0 – 120 BPM (±1BPM) | | |
| | | | E. 3 axis Acceleration to 16g | | |
| | | | F. Red / Orange / Green subject status indication | | |
| | | | G. Transmit and/or Logging Modes | | |
| | | | H. USB connectivity for data download & charging | | |
| | | | I. Internal algorithms for: | | |
| | | | o Estimated core temperature | | |
| | | | o Jump Test | | |
| | | | o Dash Test | | |
| | | | o Fall detection | | |
| | | | o Heart Rate Variability | | |
| | | | o Human Real Data | | |
| **13** | **30** | **nos** | **Heart Rate Monitors (Sensor)** | | |
| | | | **Compatibility**<br>iOS mobile devices with iOS 13 or later; Android mobile | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | devices with Bluetooth 4.0 capability and Android 7 or later; mobile devices with AppGallery and Mobile Services installed. | | |
| | | | **Battery life**<br>400 hours with Bluetooth Low Energy and 5 kHz transmission active | | |
| | | | **Weight**<br>Connector 21 g (0.74 oz), strap 39 g (1.38 oz) | | |
| | | | **Water resistance**<br>30 m (Suitable for swimming) | | |
| | | | **Connectivity**<br>ANT+, Bluetooth Low Energy, 5 kHz | | |
| | | | **Available in sizes**<br>XS-S: 51-66 cm<br>M-XXL: 65-93 cm | | |
| **14** | **2** | **nos** | **Lactate Analyzer System** | | |
| | | | A. Enzymatic amperometric detection method | | |
| | | | B. Measuring range: 0.5 - 25 mmol/L | | |
| | | | C. Hct-range 35 – 50% : 0.5 – 6.7 mmol/L blood lactate ≤0.2 mmol/L, 6.8 – 25 mmol/L blood lactate ≤3% | | |
| | | | D. Hct range >50% : 0.5 – 7.5 mmol/L blood lactate ≤0,3 mmol/L, 7.6 – 25 mmol/L blood lactate ≤4% Test solutions available for function control | | |
| | | | E. 2 Lactate anaylzer, 360 test strips, 400 safety lancets, controls, Secrets of Lactate Course, controls | | |
| **15** | **2** | **nos** | **Muscle Oxygen Monitoring System** | | |
| | | | A. SmO2 (Muscle Oxygen Saturation) and THb (Total Hemoglobin) in the capillaries and tissue of muscle.<br>B. Measures through up to 0.6” (15mm) of skin and fat.<br>C. Size: 5.0 x 4.5 x 1.2 in (128 x 115 x 30 mm)<br>D. Weight: 2.1 oz (59 g)<br>E. 3 replacement light sensors | | |
| **16** | **2** | **nos** | **Refractometer for Urine Specific Gravity** | | |
| | | | Scale - Urine S.G., serum protein, refractive index<br>Measurement Range - Urine S.G. scale: 1 to 1.06, Serum protein scale: 0 to 12g/100mL, Refractive index scale (nD): 1.333 to 1.366 (Automatic Temperature Compensation)<br>Dimensions & Weight - 1.26 x 1.34 x 8.15in (3.2 x 3.4 x 20.7cm), 3.88oz (110g)<br>Digital and Portable (or Handheld) | | |
| **1.C** | | | **Sports Psychology** | | |
| **17** | **1** | **set** | **Biofeedback System** | | |
| | | | A. 8-channel encoder / wired | | |
| | | | B. Biofeedback software | | |
| | | | C. skin conductance sensor | | |
| | | | D. Laptop (Intel Core i7; Quad Core, 1.8 GHz Clock Speed. | | |
| **18** | **1** | **set** | **Functional Near Infrared Spectroscopy** | | |
| | | | A. Optode Distance: 3 cm default<br>B. Channels: 48 channels | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | C. Light sources: 24<br>D. Accessories: Tablet (1), disposable patch (100), silicon caps (100), USB cable (2), OTG cable (2), Charger (2) | | |
| **19** | **2** | **sets** | **Eye Tracking System** | | |
| | | | A. Eye tracker: eye tracking technique: Corneal reflection, dark pupil, stereo geometry | | |
| | | | B. Sampling rate: 50 Hz or 100 Hz | | |
| | | | D. Battery type: Rechargeable 18650 Li-ion, Capacity: 3400 mAh | | |
| | | | E. Corrective lenses Kit: +3.0 dpt. in increments of 0.5 dpt. | | |
| | | | F. Eye tracking software: analysis and visualization tools | | |
| | | | G. Desktop (Intel® Core™ i7-8700K 6-Core LGA 1151 Processor; 16GB Ballistix Tactical Tracer RGB 3000MHz DDR4 (2 x 8GB); 1 x 1TB 970 EVO NVMe M.2 SSD 1 x 6TB 3.5” HDD; Keyboard; Mouse; 20" LCD monitor) | | |

**Bidder's Authorized Representative**

_____ _____

Signature Over Printed Name Principal Bidder/Supplier