

**PROPOSED MIXED USE DEVELOPMENT COMPRISING A COMMERCIAL AND
RESIDENTIAL DEVELOPMENT INTEGRATED WITH A BUS INTERCHANGE AT
HOUGANG AVENUE 10/ HOUGANG CENTRAL**

**ADDITIONAL CONDITIONS OF TENDER
(TECHNICAL)**

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PART I

1.0 GENERAL

- 1.1 The Successful Tenderer must in addition to the Particulars and Conditions of Tender, observe and comply with these Additional Conditions of Tender (Technical) in the development and lease of the Land Parcel at Hougang Avenue 10/ Hougang Central. The Particulars and Conditions of Tender and these Additional Conditions of Tender (Technical) shall be read in conjunction with the technical information booklet enclosed in the sale packet. The Successful Tenderer shall also comply with all applicable guidelines issued by the Competent Authorities and Public Utility Licensees. All proposals are subject to the approval of all relevant Competent Authorities and Public Utility Licensees.
- 1.2 The conditions and requirements of all relevant Competent Authorities and Public Utility Licensees set out in these Additional Conditions of Tender (Technical) and in the Conditions and Requirements of Relevant Competent Authorities and Public Utility Licensees and the appendices thereto (to be complied with by the Successful Tenderer at his own cost and expense) are provided to tenderers for their information only. Whilst every care and attention has been taken in the compilation and preparation of these conditions and requirements, HDB does not warrant that they constitute an exhaustive list of the conditions and requirements of the relevant Competent Authorities and Public Utility Licensees in respect of the development or that they are free from any errors or omissions. These conditions and requirements are subject to change by the relevant Competent Authorities and Public Utility Licensees and the onus lies on the Successful Tenderer to verify these conditions and requirements with HDB, the relevant Competent Authorities and Public Utility Licensees directly and comply with their prevailing conditions and requirements.
- 1.3 The Government and HDB are not liable to any tenderer and tenderers shall not claim against the Government and/or HDB for any errors and/or omissions in and for any loss suffered by any tenderer arising directly or indirectly from the reference to, usage of and/or reliance on the contents of these Additional Conditions of Tender (Technical), the Conditions and Requirements of Relevant Competent Authorities and Public Utility Licensees and appendices thereto.
- 1.4 All references to “the Successful Tenderer” herein shall be deemed to include “the approved developer” as defined in the Particulars and Conditions of Tender where the context so admits.

PART II

2.0 PLANNING CONCEPT FOR HOUGANG

2.1 PLANNING VISION

Located in the northeast region of Singapore, Hougang is known for its rich history of Teochew settlements and religious institutions located at the end of Sungei Serangoon and along Upper Serangoon Road. Following its urbanisation and development in the late 1970s, Hougang has transformed into a vibrant town that offers a wide range of commercial, community and recreational amenities for its residents. Till today, waterbodies within and around Hougang, as well as the heritage corridor of Upper Serangoon Road, continue to be significant features of the town.

Hougang was one of the three towns and estates selected to undergo the Remaking Our Heartland (ROH) programme in 2011. To realise the vision of “Colours of Hougang”, the ROH proposals for Hougang focused on 3 key strategies: revitalising the town centre, celebrating the heritage of Upper Serangoon Road, and improving and linking the canals and rivers.

2.2 KEY PLANNING CONCEPT FOR HOUGANG TOWN CENTRE

Under the ROH initiative for Hougang town, the rejuvenation of the Town Centre, i.e. “*Our Town Centre*”, is one of the key proposals. The Town Centre will be revitalised with new facilities including this Land Parcel, i.e. a mixed-use development comprising a commercial and residential development, which is envisioned to be well-integrated with the existing Hougang North-East Line (NEL) and future Cross Island Line (CRL) MRT station, a new bus interchange, and a town plaza, to create a vibrant hub and facilitate seamless connectivity for the commuters and residents in Hougang town.

PART III

3.0 SUMMARY OF PLANNING & URBAN DESIGN REQUIREMENTS

A summary of the planning requirements is set out in Table 1. The detailed planning requirements are set out in Part IV.

Table 1 – Summary of Planning Requirements for the Land

PARAMETERS	PROVISIONS / REQUIREMENTS
Site Area	46,898 sqm*
Land Use / Zoning	Commercial and Residential
Type of Proposed Development	Mixed Use Development (Commercial and Residential, integrated with Bus Interchange and Town Plaza)
Gross Plot Ratio (GPR)	2.5
Permissible Gross Floor Area (GFA)	<p>Maximum GFA: 117,245 sqm Minimum GFA: 105,521 sqm</p> <p>Minimum 70,805 sqm GFA shall be for residential use.</p> <p>In addition to residential use, the following uses are to be provided:</p> <ul style="list-style-type: none"> i) Minimum 6,500 sqm GFA shall be for Bus Interchange (inclusive of 400 sqm for commercial use in the concourse); ii) Maximum 39,940 sqm GFA shall be for commercial use, provided that: <ul style="list-style-type: none"> a. Minimum 1,000 sqm (net floor area) shall be for Supermarket; and b. Minimum 500 sqm (net floor area) shall be for Food Court. c. 600 sqm GFA for F&B in the Town Plaza; d. Minimum 1,000 sqm GFA shall be for Office use e. The remainder of the GFA may be put to other commercial uses, such as office, medical clinic, gym and recreation/entertainment uses, etc. if permitted by the Competent Authority under the Planning Act 1998. For the avoidance of doubt, the Successful Tenderer shall be responsible for obtaining the necessary permit(s) for the aforementioned commercial uses.

	<p>Airspace area of 4,000 sqm shall be for Town Plaza</p> <p>The details are set out in Part IV (Clause 4.2).</p>
<p>Building Height (maximum)</p>	<p>Subject to a technical height control of 64m Singapore Height Datum (SHD).</p> <p>The details are set out in Part IV (Clause 4.4).</p>

*Site area is subject to cadastral survey.

PART IV

4.0 PLANNING & URBAN DESIGN REQUIREMENTS

PLANNING REQUIREMENTS

4.1 PROPOSED DEVELOPMENT

The Land Parcel at Hougang Avenue 10/ Hougang Central (“the Land”) with a site area of 46,898 sqm shall be for Mixed Use Development comprising of a Commercial and Residential **[Flats (Serviced Apartments and Condominium are not allowed)]** Development integrated with a Bus Interchange and a Town Plaza (“the development”). The site area is the area measured up to the boundary lines as shown on the Certified Plan No. _____.

4.2 ALLOWABLE GROSS FLOOR AREA (GFA)

The Land is zoned ‘Commercial and Residential’ and shall be developed for a mixed use development comprising of a commercial and residential development integrated with a Bus Interchange.

Based on the site area of 46,898 sqm, the permissible Gross Plot Ratio (GPR) should not exceed 2.5*. The total GFA shall be computed in accordance with Urban Redevelopment Authority’s (URA) Development Control Guidelines.

*Indicated for information of the Tenderer only.

The permissible total GFA for the development shall not exceed 117,245 sqm and not be less than 105,521 sqm. The Successful Tenderer is required to comply with the following:

- i) At least 70,805sqm shall be for residential use, of which the type of housing units to be allowed are Flats (Serviced Apartments and Condominium are not allowed).
- ii) A minimum gross floor area of 6,500sqm shall be for Bus Interchange (inclusive of 400sqm for commercial use in the concourse).
- iii) A minimum 4,000sqm shall be used for a Town Plaza (inclusive of the 600sqm commercial GFA which shall be accounted for under the overall permissible commercial GFA referred to in Appendix C Clause 4.2(iv) for commercial use in the town plaza). GFA exemption could be considered for the 3,400 sqm (non-commercial GFA) for the Town Plaza, provided that the Successful Tenderer is able to comply with the Privately-Owned Public Spaces (POPS) design guidelines and submission requirements. Please refer to HDB’s Conditions of Contract for Town Plaza (“HDB’s COC”) for more details.
- iv) The gross floor area for commercial uses (excluding 400sqm for commercial use in the Bus Interchange concourse) shall not exceed 39,940sqm, provided that:
 - a. A minimum net floor area of 1,000sqm shall be used for a Supermarket;
 - b. A minimum net floor area of 500sqm shall be used for a Food Court;
 - c. 600sqm GFA for F&B in the town plaza;
 - d. A minimum gross floor area of 1,000sqm shall be for Office use;
 - e. The remainder of the gross floor area may be put to other commercial uses, such as office, medical clinic, gym and recreation/entertainment uses, etc. if permitted by the Competent Authority under the Planning Act 1998. For the avoidance of doubt, the Successful Tenderer shall be responsible for obtaining the necessary permit(s) for the aforementioned commercial uses

- v) Any additional GFA, over and above the maximum permissible GFA specified for the development accrued from incentive GFA schemes will be subject to the prevailing Development Control Guidelines and the approval of the Competent Authority under the Planning Act. This additional GFA may be subject to the payment of Land Betterment Charge (LBC), if applicable. Any GFA exemption will be subject to detailed evaluation by URA at the Construction Gateway stage.
- vi) The Successful Tenderer shall ensure that the total GFA for the commercial component within the said development is comprised within a single strata lot. Ownership of the commercial component in the development shall remain vested in a single owner at all times and there shall be no strata subdivision of the commercial component during the lease term
- vii) For the purpose of computing the GFA of the development, the prevailing Development Control Guidelines in the Handbook for Gross Floor Area issued by URA regarding the exemption of the covered walkways / linkways from GFA computation shall apply. Any GFA exemption will be subject to detailed evaluation by URA at the Construction Gateway stage.

4.3 BUILDING LINE / SETBACK

The Successful Tenderer shall at all times comply with URA's and the relevant Competent Authorities' requirements on the building line setback. Notwithstanding the generality of the foregoing, the building setbacks (including basement structures) shall be based on the boundary of the Land delineated on the Certified Plan No. _____.

The Successful Tenderer shall conform to URA's Current Guidelines for **Flats (Serviced Apartments and Condominium are not allowed)** with regard to Building Spacing and Setback Standards.

4.4 BUILDING HEIGHT

The development shall be subject to a technical height control of 64m Singapore Height Datum. The technical and storey height control of the development is to comply with all applicable standing guidelines issued by the Competent Authorities, including URA's Development Control Guidelines. The Successful Tenderer is to check with the Competent Authorities on the standing guidelines as the guidelines are reviewed from time to time. The lowest technical and storey height control imposed by the Competent Authorities will be applicable to the Land. The final technical and storey height are subject to the approval of the Competent Authorities.

The Successful Tenderer shall ensure that all developments, structures and fixtures on the Land do not exceed the maximum allowable height of 64m Singapore Height Datum. Such developments, structures and fixtures include those on the roof tops, whether permanent or temporary, transient or stationary, (including but not limited to building superstructure, water tanks, lift motor rooms, TV antennae, cranes, maintenance equipment, lightning conductors, solar panels, moving objects, vegetation, etc.) and all construction equipment and temporary structures (including but not limited to cranes, piling rigs, etc.) are subject to the same height limit.

The Republic of Singapore Air Force's (RSAF) clearances shall be sought for the use of construction equipment and temporary structures above 48m Singapore Height Datum (Email: height_control@defence.gov.sg). If the Successful Tenderer wishes to pre-consult RSAF on the maximum allowable height for the use of construction equipment and temporary structures, the Successful Tenderer can consult RSAF with a copy of the awarded letter and a copy of this conditions of tender. For civil aviation height and requirements, please consult the Civil Aviation Authority of Singapore ("CAAS"). The more stringent height restriction(s) from the respective agencies shall apply.

The Successful Tenderer shall submit to the Civil Aviation Authority of Singapore (CAAS) a certified surveyor as-built plan prior to applying to the Building Control Authority (BCA) for the Temporary Occupation Permit or Certificate of Statutory Completion for the development on the Land.

The Successful Tenderer shall obtain CAAS' and RSAF's prior written approval before mobilising and/or installing any construction machineries on the Land. An application to CAAS is to be submitted by the Successful Tenderer using the Crane Application Form available at URL: <http://www.caas.gov.sg/e-services-forms/e-services/application-for-obstacle-clearance>.

The Successful Tenderer shall consult DSTA (landuse@dsta.gov.sg) via email prior to making the submission at Design Gateway in CORENET X, to obtain DSTA's clearance for the total building height, site layout and vehicular access points(s). Please include URA Development Control Group in your email consultation to DSTA. Prior to the Construction Gateway submission, the Successful Tenderer should reconsult DSTA if required.

In the event where there are any communication installations on the Land, the Successful Tenderer is advised to seek clearance from relevant agencies such as Info-communications Media Development Authority of Singapore (IMDA).

4.5 DEVELOPMENT CONTROL

The Successful Tenderer shall comply with the Development Control (DC) Guidelines issued or may be issued by the Competent Authority under the Planning Act 1998, unless otherwise stated in the Technical Conditions of Tender.

The building massing and design treatment of the development must be sensitive to the surrounding environment. The layout of the building blocks shall be subject to evaluation at the Development Application stage. The Successful Tenderer can refer to URA's circular dated 4 March 2010 titled "*Sensitive Design and Development: An Industry Guide of Good Practices to Minimise Wall-like Developments*" on possible design treatment options for the development.

In addition, regardless of when the development application is submitted to URA, the Successful Tenderer shall comply with the revised Gross Floor Area (GFA) and strata area definitions as set out in the circular "Harmonisation of floor area definitions by URA, SLA, BCA and SCDF" issued on 1 September 2022.

Where applicable, the Successful Tenderer's Qualified Person shall submit a Development Statement of Intent (DSI) together with their development proposal to the Competent Authority under the Planning Act 1998 at the formal submission stage in compliance with prevailing guidelines and circulars issued by the Competent Authority.

Existing Underground Structures

The Successful Tenderer shall be responsible, at his own cost and expense, to carry out his own site investigation to verify whether there is any sub-structure or other obstructions e.g. footings, piles, tree roots etc. in the ground of the Land, and ascertain their effect on the proposed development, including the removal of such sub-structure or obstructions, if necessary. The Successful Tenderer shall be deemed to have notice of any sub-structure or other obstructions in the ground of the Land and shall not raise any objection or requisition whatsoever in respect of any such sub-structure or other obstructions.

4.6 PLATFORM LEVEL

The existing levels of the Land are as shown in the Topographical Survey Plan No. 2450-UNS-TP-HG-24326-01A. Public Utilities Board (PUB) has specified that the minimum platform level (MPL) for the Land shall not be lower than 4.5m above Singapore Height Datum, or 1m above the adjacent final road/ground level for special facilities and developments with direct or indirect

linkages to underground special facilities, or any other level as determined by PUB as in stated in the latest edition of the 'Code of Practice on Surface Water Drainage', whichever is the highest. As the proposed diversion drain will be constructed by LTA in conjunction with Cross Island Line MRT proposal, the Successful Tenderer shall liaise and coordinate with LTA to ensure the proposed minimum platform levels are based on future road levels.

The minimum crest levels for basements of institutional, commercial or multi-unit residential developments shall be at least 300mm above the MPL as stated above. The minimum crest level for entrances to the underground pedestrian network having direct or indirect underground linkage to MRT Stations, or other underground special facilities shall be 300mm above the MPL as stated above. Please pre-consult PUB(C&W) on the required MPL before making DC/BP submission in CORENET or Design Gateway/ Construction Gateway/ Completion Gateway (where applicable) in CORENET X.

In complying with the MPL requirement, thorough investigations of the Land shall be conducted to determine suitable platform profiles to ensure that the runoff within, upstream of and adjacent to the Land can be effectively drained away without causing flooding within the site and in the vicinity of the site. Any proposal to level/backfill the Land shall be submitted to PUB's Catchment and Waterways Department for comments and approval.

The topography of the site shall not be changed without the approval of PUB.

4.7 VEHICULAR ACCESS

The Land Transport Authority (LTA) requires the Successful Tenderer to comply with the following requirements:

- i) The vehicular accesses (for servicing, car parking, passenger pick-up/drop-off, taxi stand) to the Land for the commercial and residential components, as well as the Bus Interchange shall be as follows:
 - a) Access to the residential component shall be taken from Hougang Central (Minor) with a Left-in Left-Out (LILO) arrangement.
 - b) Access to the commercial component shall be taken from Hougang Avenue 10 with a separation between the ingress (left-in only) and egress (left-out only).
 - c) The two main accesses to the Bus Interchange shall be taken from Hougang Avenue 10 and Hougang Central with signalised full movement junctions.
- ii) The accesses are shown indicatively on the Site Plan. The exact locations of the accesses are subject to LTA's approval based on the layout of the development to be proposed by the Successful Tenderer.
- iii) Proposed drop barriers and pick-up/drop-off points are to be located adequately from the access within the commercial and residential development at basement level where possible. The Successful Tenderer is to cater for adequate queuing space within the internal driveway for the traffic entering the Land, such that there is no over-spilling of the development traffic onto the public roads.
- iv) Sufficient loading / unloading / service bays shall be provided at convenient proximity to the amenities. The loading / unloading facility shall have adequate loading / unloading bays, sufficient area for circulation and manoeuvring of delivery trucks, and be conducive for use by the delivery vehicles. The internal driveway leading in and out of the loading / unloading facility shall also have sufficient headroom, turning radius and width to allow delivery vehicles to access it. The Successful Tenderer is to provide proper and adequate signage to direct vehicles to the loading / unloading facility.
- v) The Successful Tenderer is to ensure that any new plantings / landscaping along green

buffer near the access points do not obstruct motorists / pedestrian crossing line of sight of on-coming traffic.

- vi) The Successful Tenderer is to design the boundary walls at the vehicle access points / exit point / pedestrian side gates such that the line of sight amongst motorists / pedestrians / cyclists crossing the access is clear.

Pick-Up / Drop-Off (PUDO)

- vii) The Successful Tenderer shall provide proper PUDO points for the development within the Land to avoid affecting traffic on the roads.
- viii) The PUDO points are to be designed adequately to allow private shuttle minibuses serving the development and other developments within the vicinity to board / alight. This includes the provision of sufficient number of bays, adequate turning radius, driveway width, and headroom for the driveway and access.
- ix) All PUDO points shall be adequately designed for within the development and should not affect ingress / egress movement. The PUDO points should also be located further within the development.
- x) Vehicle lay-bys, loading and unloading bays and PUDO points shall be located within the Land.
- xi) The Successful Tenderer is to demonstrate that the PUDO facilities and internal circulation layout for the development are operationally feasible and does not cause congestion on the public roads. This will be reviewed during the detailed plan submission stage to LTA.

The Successful Tenderer shall at his own cost and expense, construct the culverts for the accesses and hand it over to the relevant Competent Authorities for management and maintenance.

The detailed proposal for the access points and the traffic layout arrangement are subject to the requirements and approval of LTA and other relevant Competent Authorities at the formal submission stage and as set out in Appendix D.

Detailed plan submission, including the traffic plans for the development showing the details of the accesses, circulation, traffic measures etc., shall be made to LTA's Planning Compliance Division for review and clearance during the plan submission stages.

4.8 VEHICLE PARKING REQUIREMENTS

- i) The Successful Tenderer shall provide parking lots for the development in accordance with the full physical parking requirements of the prevailing Parking Places (Provision of Parking Places and Parking Lots) Rules. The Successful Tenderer is required to apply to LTA to take up the lower bound parking provision under the prevailing Range-based Parking Provision Standards (RPPS).
- ii) In view of the Land is an Integrated Transport Hub, the Successful Tenderer shall propose improvement measures (e.g. comprehensive wayfinding system) with the priority to promote Walk, Cycle and Ride, as well as to enhance the active mobility experience of commuters to transportation nodes and surrounding developments.
- iii) Basement carparks shall have a setback from the boundaries according to URA's guidelines.
- iv) The design of the parking place shall include adequate spaces for vehicles to carry out furniture delivery or house-moving activities. The Successful Tenderer is strongly

encouraged to provide parking lots for motorcycles within the layout of the carpark.

- v) The design and layout of the car park will be subject to the requirements and approval of the Authority and the relevant Competent Authorities and Public Utility Licenses under the LTA's requirements for the Land.

Electric Vehicles (EV) Charging Infrastructure Provision

- vi) The Successful Tenderer shall provide for the required EV charging provisions under the Electric Vehicles Charging Act (EVCA) 2022, if applicable. Please refer to the guidelines published on LTA's website at https://www.lta.gov.sg/content/ltagov/en/industry_innovations/technologies/electric_vehicles/transitioning_to_evs.html under 'Widening Coverage of Accessible EV Charging Points' for more information.

Bicycle Parking Provision

- vii) The Successful Tenderer shall comply with LTA's requirements for bicycle parking provisions as set out in Appendix D Clause 3.0, and shall be subject to the evaluation and approval of the Authority and other relevant Competent Authorities.
- viii) The existing 240 bicycle lots at both Entrance B and C should be retained. If affected by works, the Successful Tenderer should provide 1 to 1 replacement while also providing temporary lots to cater to commuters. Adequate wayfinding signs to the temporary lots shall be provided.
- ix) The Successful Tenderer shall provide an additional 100 bicycle lots at street level near either of the Entrance B or C, to cater to the existing shortfall of bicycle parking at these entrances.
- x) The Bus Interchange (BI) shall provide 150 bicycle lots, to cater to the parking demands derived from the BI. These lots can also serve to accommodate the spillover demand from MRT commuters.

4.9 REQUIREMENTS FOR INTEGRATED BUS INTERCHANGE

- i) The Successful Tenderer shall be responsible for the design and construction of the Bus Interchange within the Land. The Successful Tenderer is to comply with the conditions as set out in the LTA's BI Agreement (refer to Appendix C(I)).
- ii) The Bus Interchange's layout and any proposed road and commuter facilities shall fully comply with all requirements as stated in Schedule 1 of LTA's BI Agreement (refer to Appendix C(I)).
- iii) The cost of construction of the Bus Interchange and their associated works shall be reimbursed by the LTA in accordance with the LTA's BI Agreement (refer to Appendix C(I)).
- iv) The detailed requirements and scope of works for the Bus Interchange and its associated works are stated in the LTA's BI Agreement (refer to Appendix C(I)). The Successful Tenderer is to apply for a Temporary Occupation License for the construction of the Bus Interchange until the site is handed over to MOT/LTA.
- v) For lifts/ escalator(s) which are connecting any transport nodes (such as the BI and/ or MRT) but provided as part of the development, the Successful Tenderer shall seek LTA's approval to ensure the sufficiency of the proposed quantities, speed and landing spaces required.

- vi) The development's accesses and/ or passageways which are provided as connections to the BI and/ or MRT station shall be sheltered, maintained at the same width as the BI and/ or MRT station's commuter accesses and passageways, free from any encumbrances.

URBAN DESIGN REQUIREMENTS

4.10 DESIGN CONSIDERATIONS FOR KEY USES

4.10.1 Public Spaces

The development shall provide a range of public spaces which are well designed and integrated with the commercial and public transport facilities.

- i) The public spaces are envisaged to be active, vibrant and inclusive spaces. The spaces shall be designed to be aesthetically pleasing and conducive for social interactions.
- ii) The design of the public spaces shall contribute to creating a green urban environment within. Attention to details shall be given to the landscaping with sufficient provision of public seating, shade and street furniture and other amenities.
- iii) The public spaces shall provide a good sense of arrival and orientation for people arriving from the surrounding developments, Hougang MRT Station, bus interchange, and future developments around the development.

Town Plaza

- iv) The Successful Tenderer shall design and construct a Town Plaza at the ground level, as shown in the Control Plan. The Town Plaza shall be used as a major civic space and a venue for activities and public community events, and shall be designed to be column-free as far as possible. The Successful Tenderer is to comply with the conditions as set out in HDB's Conditions of Contract for Town Plaza ("HDB's COC").
- v) The Town Plaza shall be well connected to the pedestrian network within and around the development such that there are clear sight lines and easy orientation from the existing Hougang (NEL) Station Entrance B and Hougang Mall. Public spaces located on the upper storeys can also be designed to overlook the Town Plaza.
- vi) The food and beverages ("F&B") facilities within the Town Plaza can serve as a commercial belt linking the MRT exit to the proposed commercial facilities at the development. The Town Plaza shall integrate seamlessly with the development, such that activities within the Town Plaza can spill into the development and vice versa.
- vii) Activity-generating uses are encouraged to be located adjacent to the Town Plaza.
- viii) The landscaping of the Town Plaza shall be consistent with the overall landscape strategy as stated in Appendix C Clause 4.16.
- ix) The design and quality of materials, external fixtures and street furniture, public lighting, landscaping and tree-planting of the Town Plaza shall complement the overall design concept and treatment of the development.
- x) The proposed Town Plaza location shown in the Control Plan is notional and the exact profile and configuration are to be studied and proposed by the Successful Tenderer, and are subject to further evaluation by the HDB Design Review Panel and the relevant Competent Authorities.

Welcoming Spaces

- xi) Welcoming spaces to the development are to be provided at the following locations (as indicated in the Control Plan):
 - a. At the junction of Hougang Avenue 6 and Hougang Avenue 10 on ground-level;
 - b. Next to the Hougang NEL Entrance B and Town Plaza on ground-level; and
 - c. Next to the entry into the development from the elevated link on the upper level.
- xii) The welcoming spaces at ground-level should be minimally 200sqm, while the upper-level welcoming space at should be minimally 100sqm. The key design intentions for the welcoming spaces are to give visitors a sense of arrival to the development, and help with orientation and wayfinding.

4.10.2 Bus Interchange

- i) The Successful Tenderer shall be responsible for the design and construction of the Bus Interchange within the development as set out in Appendix C Clause 4.9.
- ii) The Bus Interchange shall be sensitively located within the development on the ground floor to minimise impact to the quality of spaces on the ground level and the streetscape. The placement of the Bus Interchange shall not compromise the activity-generating uses and active frontages on the 1st storey. The Bus Interchange and its supporting building mechanical and electrical services shall also be sensitively screened such that it does not pose disamenities to the residents in the surrounding developments. Mechanical ventilation and kitchen exhaust vents shall not be directed to any existing or future residential developments.
- iii) Activity-generating uses within the Bus Interchange (e.g. ticket offices, shops) shall synergise with activity-generating uses within the commercial areas of the development.
- iv) The Successful Tenderer shall provide convenient, sheltered, barrier-free and direct connections between the Bus Interchange, the rest of the development, and surrounding commuter facilities (e.g. bus stops, MRT station, PUDO points) with appropriate way-finding solutions. The Bus Interchange shall not obstruct pedestrian thoroughfares through the development.

4.10.3 Activity-Generating Uses

- i) The Successful Tenderer shall provide activity-generating uses such as Shops, F&B, and other similar uses along key edges and pedestrian thoroughfares to create vibrant street life and activated walking experience along the key public spaces and thoroughfares:
 - a. Ground Level: Along key pedestrian thoroughfares, and the Town Plaza;
 - b. Underground: Near the proposed underground links to the CRL MRT station.

4.11 BUILDING FORM

4.11.1 Massing

- i) The development shall be expressed as a distinctive community, retail and residential attraction with a unique identity, befitting its land use and location within the Hougang Town Centre.

- ii) The proposed building form and massing shall respect the context / built environment of the Land in its setting. The proposed design solution shall complement the surrounding developments (including but not limited to the design of the existing and future MRT station), and be conducive to the overall surrounding character / ambience.
- iii) The overall building form and massing of the development shall be laid out in an appropriate layout, form and scale to complement and provide a good relationship to its neighbouring developments, while achieving a comfortable human-scale at the street level.
- iv) The urban edge could be reinforced through a variation in the massing of built form and façade design. At the human-scale, landscaping solutions (e.g. variation in planting, stepping / terracing of landscaping, lightings, seating etc.) are also encouraged.

4.11.2 Façade

- i) As a landmark development at the heart of Hougang which enjoys good frontage from all sides, all façades facing Hougang Avenue 10, Hougang Central, Hougang Central (Minor), and the existing Hougang Mall and pedestrian mall (i.e. at Blocks 810, 811) shall be treated as main building elevations.
- ii) The façade is to be integrated with the existing and future RTS structures (e.g. station entrances, ancillary building), with consideration for their designs.
- iii) Any ventilation discharge points shall not be discharged onto the key pedestrian thoroughfares and public spaces, particularly along the Town Plaza.
- iv) The façades of the integrated Bus Interchange and all proposed car parking levels above grade and external ramps to service car parking areas (if any) shall be visually screened and aesthetically designed as part of the overall architectural treatment of the development.

4.11.3 Roofscape

- i) The roof areas of the development are to be considered as the “fifth” elevation and designed to be fully integrated as part of the overall building form and architectural treatment of the development. The Successful Tenderer is encouraged to design the roof areas as either a distinctive crown to the building to contribute to the skyline profile or landscaped as a roof garden.
- ii) All service areas, M&E equipment, water tanks, car parks, etc., if any, at the podium and / or tower rooftop levels, shall be fully integrated and located within the overall envelope of the development. These areas shall be visibly well-screened from the top and on all sides to ensure that they are not visible from the surrounding developments and open spaces. If trellises, louvres or other similar types of construction are used for screening, the screening elements shall be oriented to cut off the view of the services from the street level and surrounding buildings. If perforated panels are used, the perforations of the panels shall be evenly distributed.

4.12 STREETSCAPE

- i) The frontage of the development at the ground level is to be designed to be visually porous with multiple openings along all edges, that provide convenient barrier-free access into the development, especially from traffic junctions/crossings, bus stops, drop-off points, and entrances of the MRT station and surrounding developments.
- ii) The Successful Tenderer shall provide pedestrian entrances to the development minimally at the indicative locations as shown in the control plan.

- iii) These pedestrian entrances of the development shall be designed to be welcoming and attractive. The welcoming spaces at these entrances shall be designed to give a sense of arrival to the development.
- iv) The Successful Tenderer shall create a distinctive streetscape through the design of lighting, paving, urban furniture and other street elements that are inspired by the Hougang heritage, to contribute to an active streetscape.

4.13 SERVICES AND VEHICULAR ACCESS

The Successful Tenderer shall ensure that the services and vehicular access will not cause any undue nuisance or disamenities to the surrounding / adjacent developments in terms of noise, glare, smell and any other form of pollution.

4.13.1 Bin Centre

- i) Sufficient service areas, including those for the refuse bin centre, electrical substation (ESS), loading/unloading bays, holding bays etc., are to be provided within the development to meet the needs of the proposed uses.
- ii) To create an attractive public realm, service areas are not allowed to front or open out onto the covered walkways and public spaces, and are to be fully integrated within the overall building form and architectural treatment of the development. The service areas are to be visually well-screened from the top and all sides, and subject to the prevailing screening guidelines for M&E services.
- iii) The Successful Tenderer shall ensure that the bin centre and its entrance area, including any parking space for refuse trucks, are located away from any surrounding residential development and the key uses of the development.
- iv) The service driveway for the bin centre is to be integrated within the development and the length of the service driveway must be able to accommodate all service vehicles.
- v) Other major services, such as ESS, are encouraged to be clustered with the bin centre to minimise visual impact and share the service driveway with the bin centre.

4.13.2 Internal Driveways

- i) All vehicular ingress/egress to the carparks, service areas, passenger drop-off points and taxi lay-bys, etc., including external ramps and all associated structures and fixtures, are to be well integrated within the layout, building form and overall architectural treatment of the development, in addition to being visually well-screened.
- ii) Vehicular driveways including access roads to loading and unloading bays or for services and maintenance shall be designed to not interrupt pedestrian flows between the development and the surrounding roads.

4.14 PEDESTRIAN NETWORK

- i) The development shall provide direct, porous and legible pedestrian connection with at-grade, above-grade and underground links to facilitate convenient movement for pedestrians and other active mobility users through the development and into the surrounding developments, including the existing HDB developments, future developments, MRT station, Bus Interchange, taxi/PUDO points and bus stops.
- ii) These pedestrian connections are to be appropriately sized and located to cater to expected crowds, while providing a comfortable street-based walking/cycling experience.

4.14.1 At-Grade Pedestrian Walkways / Linkways

- i) The development shall be designed to provide direct and legible at-grade sheltered pedestrian network to facilitate pedestrian movement through the development and transport nodes, and into the surrounding HDB developments etc. The pedestrian network shall be appropriately sized and located to cater to expected crowds, while providing a comfortable street-based walking experience.
- ii) For the purpose of computing the gross floor area of the development, the prevailing Development Control Guidelines in the Handbook for Gross Floor Area issued by URA regarding the exemption of the covered walkways/linkways from GFA computation shall apply. Any GFA exemption will be subject to detailed evaluation by URA at the Construction Gateway stage.

At-Grade Covered Walkways

- iii) The Successful Tenderer shall provide a continuous minimum 3.6m-wide (and minimum 3.0m clear) covered pedestrian walkway around the development as shown in the Control Plan, and in compliance with URA's guidelines for the provision of covered walkways. The covered pedestrian walkway shall be provided to facilitate seamless and convenient pedestrian access between the RTS structures, and key nodes within the development, including but not limited to the bus interchange, commercial spaces, Town Plaza, as well as the residential component.
- iv) The location and alignment of the covered walkways, as shown in the Control Plan, are indicative only. The development can provide articulation of the covered walkway as long as the walkway provides continuous shelter around the periphery of the development. The HDB Design Review Panel and the relevant Competent Authorities shall review the extent and alignment for the covered walkway, in relation to the detailed design of the development. The Successful Tenderer shall seek LTA's approval on modifications and connections to the existing covered linkways.
- v) The Successful Tenderer shall ensure that the proposed covered pedestrian walkways are open and accessible to the public at all times.
- vi) The external soffit heights of the covered walkways shall not exceed 3.6m high. Higher external soffit heights can be supported, subject to the approval of the HDB Design Review Panel and the relevant Competent Authorities, and the provision of drop-down panels or the width of the covered walkways being increased to match the higher soffit height in order to provide adequate weather protection for pedestrian users during inclement weather. Higher soffit heights can be allowed at the location of vehicular access points to comply with LTA's minimum clearance requirements for vehicular access.
- vii) The platform levels of the covered walkways shall match the platform level of the adjacent road sidetable, wherever possible. Where the platform level of the ground floor of the development is lower or higher than the required level of the covered walkways, barrier-free accessibility, i.e. ramps, shall be provided to connect the two levels and they shall be within the development. The level of the covered walkways shall be maintained at a constant level as far as possible and any changes in levels are to be accommodated by ramps. Adequate lighting shall also be provided.
- viii) The Successful Tenderer shall keep the covered walkways of the development unobstructed and accessible to the public at all times and shall not erect or put up any fence, wall structure, or any form of obstruction on or along the covered walkways.

Public Thoroughfare through the Development

- ix) The Successful Tenderer shall provide a continuous minimum 6m-wide at-grade public thoroughfare through the development as notionally indicated in the Control Plan, to be

accessible minimally during the bus interchange operating hours. The public thoroughfare shall be provided to facilitate seamless and convenient pedestrian access between Hougang Avenue 10 and Hougang Central, as well as commuter access to the key transport nodes, including the existing Hougang NEL MRT station, bus interchange, and bus stops along the abovementioned roads.

At-Grade Connection to Basement

- x) Please refer to Appendix C(III) CR08 Station worksites and Interfacing for more details.

4.14.2 Elevated Pedestrian Connection

- i) The design of the elevated link shall complement the overall design concept and façade design of the development.
- ii) The elevated link shall be barrier-free and conveniently connected from the ground level for both pedestrians and cyclists via stairs, escalators, lifts, ramps, etc., where appropriate.
- iii) The design of the elevated link shall prioritise pedestrians, such that the safety and smooth circulation of pedestrians are not to be compromised by the movement of cyclists and other active mobility device users.
- iv) The elevated link will provide sheltered connectivity from the residential developments to the north, across the drainage reserve and Hougang Avenue 10, into the development.
- v) Please refer to Appendix C Clause 5.7 and Appendix C(III) CR08 Station worksites and Interfacing for more details
- vi) The Successful Tenderer shall liaise with HDB, LTA, and the Competent Authorities on the integration of the bridge landing with the future CRL Station Entrance 4 and the existing residential development.

4.14.3 Below-grade Pedestrian Connection

- i) Activity-generating uses, such as shops, shall be provided near the underground pedestrian link within the land leased to the Successful Tenderer. It should be attractively-designed and user-friendly, well-lit and safe for use.
- ii) The technical requirements (including widths, height, alignment) of the underground pedestrian links shall comply with the Competent Authority's requirements in Appendix C(III) CR08 Station worksites and Interfacing.
- iii) The Successful Tenderer shall ensure that the underground pedestrian links are to be publicly accessible, i.e. accessible minimally during the bus interchange operating hours. The Successful Tenderer shall liaise with LTA and its appointed Operator on the opening hours of the underground pedestrian links. The Successful Tenderer is also required to comply with the security requirements imposed by LTA (i.e. surveillance cameras, roller shutter door, etc.), where applicable.
- iv) The underground pedestrian links shown in Control Plan are notional and the exact locations and levels are to comply with the requirements in Appendix C(III) (CR08 Station worksites and Interfacing) and to be studied and proposed by the Successful Tenderer, and is subject to further evaluation by the HDB Design Review Panel and the relevant Competent Authorities.
- v) The Successful Tenderer shall liaise with LTA on the details of the underground pedestrian links.

4.15 CYCLING CONNECTIVITY

- i) The development will be well-served by a cycling network. The Successful Tenderer shall ensure convenient and seamless connectivity for cyclists between the development and existing cycling paths along the development. The Successful Tenderer shall also put in safety measures at interfaces between the cycling path and vehicular ingress/egress points, as well as pedestrian entrances / thoroughfares of the development.
- ii) Strategic placement of bicycle parking facilities near to key nodes is encouraged. Bicycle parking and end-of-trip facilities should be adequately and elegantly screened off from public areas.

4.16 LANDSCAPE STRATEGY

- i) The Landscape shall take reference to the history and heritage of Hougang, which has origins as a fishing village and port at the upstream of Sungei Serangoon. The Successful Tenderer is encouraged to adopt a mix of riverine, freshwater swamp, and back mangal plant species to reflect the site's context, and to be aligned with NParks' planting character along the Northeastern Riverine Loop.
- ii) The Successful Tenderer is encouraged to adopt a mix of riverine, freshwater swamp, and back mangal plant species to reflect the site's context, and to be aligned with NParks' planting character along the Northeastern Riverine Loop.
- iii) The development is near several green and blue elements, including Punggol Park and Sungei Serangoon, and is directly adjacent to a canal along Hougang Avenue 10. The development should ensure that the landscape strategy responds to and is cohesive with these neighbouring green spaces.
- iv) The development shall fulfil the Landscape Replacement Areas requirements with an overall greenery provision of 40% and minimum green plot ratio of 4, as per prevailing authority guidelines.
- v) The development shall be designed with good landscaping and sustainability strategies to respond appropriately to Singapore's tropical climate. The facades are to be well-articulated with solid (walls) / void (fenestration) areas (e.g. recesses, ledges, sun-shading devices, etc.) to respond appropriately to the tropical climate.

4.17 COMPLIANCE TO AUTHORITY REQUIREMENTS

Authority requirements (such as compliance to setback requirements, fire safety requirements, etc.) are to be considered upfront as part of the design. Compliance to authority requirements should not compromise the quality of the design outcome, and should not compromise the requirements of co-locators. The Successful Tenderer is required to demonstrate that authority requirements have been considered in the design over HDB Design Review Panel.

PART V

5 OTHER REQUIRED WORKS

5.1 DEMOLITION OF VACATED BRANCH AND EXISTING CAR PARK WITHIN LAND PARCEL

HDB requires the Successful Tenderer to comply with the following requirements:

- (i) The Successful Tenderer is required, at his own cost and expense, to demolish the vacated branch office and existing open-air car park and remove any abandoned

service and/or divert any existing services as part of the development works for the Land. The Successful Tenderer shall ensure that the trees, buildings and services, if any, within the vicinity of the works are not damaged or in any way affected by the demolition works at all times.

Closure of Existing Car Park

- (ii) The Successful Tenderer is required to carry out a public communications plan to inform the surrounding building owners/occupiers and existing car park users on the closure of the existing car park within the Land Parcel.
- (iii) The Successful Tenderer shall distribute flyers to the surrounding building owners/occupiers and enact car park closure signages/ banners at the car park at least 4 weeks before the closure of the car park. In addition, the Successful Tenderer shall place a copy of the flyer on the windscreens of the cars parked at the existing car park on the 2 Fridays and 2 Saturdays during lunch and evening peak hours before the car park closure. The Successful Tenderer shall ensure sufficient visibility and placement of relevant signages/ banners at the car park.
- (iv) The Successful Tenderer shall submit to the Authority a copy of the flyer, signage/ banner (include proposed locations), the proposed dates of distribution and the details of the surrounding building owners/occupiers which will receive the flyer, for the Authority's prior approval, before distributing the flyers and enacting the signages/ banners at the approved locations. The flyer and signage shall include but not limited to the following:
 - a. Date of car park closure;
 - b. Location plan showing the Land Parcel and surrounding alternative car parks; and
 - c. Successful Tenderer's contact details
- (v) The Successful Tenderer shall submit to the Authority after the distribution of flyers and enacting of signage a written declaration that the requirement under Condition 4.3 (i) have been complied with. Upon confirming that the declaration provided by the Successful Tenderer is in order, the Authority will then proceed with the car park closure on the proposed date as stated in the communication materials.
- (vi) On the date of closure or during the period deemed necessary, the Successful Tenderer may need to deploy manpower on site to direct motorists to alternative car parks.

5.2 ROAD IMPROVEMENT WORKS AT HOUGANG CENTRAL AND HOUGANG AVENUE 10

LTA requires the Successful Tenderer to comply with the following requirements:

- i) The Successful Tenderer is required, at his own cost and expense, design and construct the road improvement works as set out in Appendix D Clause 3.0. The road improvement works include:
 - a. to widen Hougang Avenue 10 from a Dual-2 to Dual-3 road, including junction improvement works at Hougang Central (Minor) and Hougang Avenue 6, road-related and commuter facilities as required by LTA. As part of the road widening works, the Successful Tenderer shall also modify the existing signalised pedestrian crossing in front of Blk 521 Hougang Avenue 10. The Successful Tenderer is required to apply Temporary Occupation Licence (TOL) to access state land to carry out work.
 - b. to realign and improve Hougang Central, including junction improvement works at Hougang Central (Minor) and Upper Serangoon Road. As part of the road improvement works, the Successful Tenderer shall also modify the affected HDB

internal driveway at Blk 851 Hougang Central, and re-locate the existing signalised pedestrian crossing in front of Blk 810 to Blk 806 Hougang Central.

- ii) The Successful Tenderer shall carry out swept path study to ensure the modification to the affected HDB internal driveway allows for fire engines and refuse trunks to pass through without difficulty. The Successful Tenderer shall seek HDB's Car Park Department's approval on the design of the modified driveway before proceeding with the works.
- iii) The Successful Tenderer is required, at his own cost and expense, to provide the commuter and road-related facilities along Hougang Avenue 10, Hougang Central and Hougang Central (Minor) as required by LTA. These facilities include 2m-wide cycling paths, 1.5m-wide footpath and 2.4m-wide covered linkways. The Successful Tenderer shall refer to the Site Plan, Control Plan and Schedule 1 of LTA's BI Agreement (Appendix C(I)) for more details.
- iv) The Successful Tenderer shall at his own cost and expense, carry out a Transport Impact Assessment (TIA) study and submit it to LTA for approval. Subject to the outcome of the TIA study, there may be additional localised road improvement works as recommended in the TIA to be implemented by the Successful Tenderer at his own cost and expense.
- v) As LTA has CRL infrastructure works and road works along Hougang Central, Hougang Central (Minor) and Hougang Ave 10, the Successful Tenderer will need to work closely with LTA on the interfacing matters along these roads.
- vi) The Successful Tenderer is to comply with BFA standards and adopt universal design principles into the design of the development and pedestrian paths so as to cater for pedestrians, cyclists and other user groups (families with prams, persons in wheelchairs/personal mobility aids, etc) moving between the residential blocks and public paths (e.g. roadside footpath, paths along water bodies), should there be a level difference between the Land and the road. Specifically, placing of BFA ramps and/or wheeling ramps should be considered along any side of the Land abutting any roads to connect Active Mobility users to nearby public paths. Any retaining structures arising from level differences, should it be required, shall be confined entirely within the Land.
- vii) The Successful Tenderer shall provide splayed/ porous boundary walls near vehicular/ pedestrian accesses and corners. This would help to enhance safety by providing both development and path users with good sight visibility and allow users to take any necessary evasive actions to avoid collisions.
- viii) The Successful Tenderer shall not design the internal pedestrian and cyclist circulation route into the development such that it shares with the vehicular driveway. Protected/Segregated path shall be provided.
- ix) The Successful Tenderer shall comply with LTA's Checklist 1 (General Requirements) and 4 (Covered Linkway) of Infrastructure Design Criteria (IDC) Volume C – Commuter Infrastructure (under Chapter 1) as well as Checklist 1 (Covered Linkway) of Infrastructure Design Criteria (IDC) Volume C – Commuter Infrastructure (under Chapter 4) which can be obtained from LTA website. The detailed proposal is subject to the requirements and approval of LTA and other relevant Competent Authorities at the detailed planning stage.

5.3 BUS PRIORITY STUDIES

- i) The Successful Tenderer shall study and implement suitable bus priority measures to support and facilitate bus movements into the Bus Interchange and around the vicinity of the Land, such as but not limited to bus lanes along Hougang Central (Minor) and bus-only storage lanes for the accesses into the Bus Interchange. The Successful

- Tenderer shall study additional measures on alternative corridors should LTA deem this necessary along the way of the study.
- ii) The Successful Tenderer shall study the results of implementing the bus priority measures and present them to LTA for review as part of the Traffic Impact Analysis (TIA) study. This includes but is not limited to the queue lengths at junctions and number of cycles to clear the junctions. The Successful Tenderer shall propose and study suitable measures to mitigate any resultant traffic impact in the vicinity, subject to LTA's approval and acceptance.
 - iii) For changes to the junction/ road configurations and traffic light phasing, the Successful Tenderer shall submit the necessary temporary and final traffic plans which includes the existing and proposed traffic aspect layout and phasing diagram to LTA for approval and acceptance.
 - iv) For avoidance of doubt, the costs of studying and implementing these bus priority measures shall be borne by the Successful Tenderer.

5.4 DIVERSION OF HOUGANG NEL MRT ENTRANCE C FIRE ESCAPE STAIRS/ VENT SHAFT

- i) The Successful Tenderer is required, at his own cost and expense, to re-route and construct the fire escape stairs / vent shaft as the location of these structures is dependent on the Successful Tenderer's design of the development. The approximate position of the proposed re-routed fire escape stairs/ vent shaft is as shown on the Site Plan. The actual position is dependent on the eventual design/ layout proposed by the Successful Tenderer and would be subject to LTA's approval.
- ii) The re-routed fire escape route shall be 2m – 3m clear width and open to sky. Please refer to Appendix C(II) Section 3 Clause 4.2(2) for more details.
- iii) The re-routed ventilation shaft shall be re-circulated. Please refer to Appendix C(II) Section 3 Clause 6.11 for more details.

5.5 DIVERSION OF EXISTING 1.8M DRAINAGE RESERVE

PUB and LTA require the Successful Tenderer to comply with the following requirements:

- i) The Land is affected by a 1.8m(w) drainage reserve (DR). The existing drain within 1.8m DR shall not be interfered with or altered until CR112's proposed permanent diversion drain is completed, accepted and functional.
- ii) As the proposed diversion drain will be constructed by LTA in conjunction with Cross Island Line MRT proposal, the Successful Tenderer shall liaise and coordinate with LTA on the programme of the proposed drainage diversion works. Please refer to Appendix C(IV) LTA Proposed Drainage Works for information.
- iii) The Successful Tenderer shall conduct a comprehensive study of the entire permanent drainage network system inclusive of LTA's proposed drainage, adjacent to the proposed development for complying with PUB requirements and fit for purpose.
- iv) The Successful Tenderer is required, at his own cost and expense, to construct the remaining stretch of the drain along Hougang Central and, if deemed necessary, modify CR112's constructed drain.
- v) The Successful Tenderer shall also refer to Appendix D Clause 4.0 for more details on PUB's requirements.

5.6 COVERED WALKWAY/ LINKWAY REQUIREMENTS

Continuous Covered Walkways around Development Boundary

URA requires the Successful Tenderer to comply with the following requirements:

- i) As part of URA's guidelines for mixed commercial & residential developments, the Successful Tenderer is required to provide a minimum 3.6m-wide (and minimum 3.0m clear) covered walkway along the boundary of the development.
- ii) The proposed covered walkways are to be within the Land and shall be built and maintained by the Successful Tenderer at his own cost.
- iii) The Successful Tenderer shall study the interfacing connection between the covered walkway provided around the development and the covered linkway provided within Road Reserve.
- iv) The Successful Tenderer shall demolish any existing covered linkway(s) within the Land.

Covered linkways to existing HDB blocks

LTA requires the Successful Tenderer to comply with the following requirements:

- v) The Successful Tenderer is required, at his own cost and expense, to provide additional 2.4m-wide covered linkway from HDB Block 806 to the proposed signalised pedestrian crossing, and connect the existing covered linkway from HDB Block 810 to the proposed covered linkway which will link to the proposed taxi stand/ PUDO as shown on the Site Plan.

5.7 PEDESTRIAN OVERHEAD BRIDGE WITH SHELTERED CONNECTION TO EXISTING HDB

LTA requires the Successful Tenderer to comply with the following requirements:

- i) The Successful Tenderer is required, at his own cost and expense, to provide a pedestrian overhead bridge (POB) across Hougang Avenue 10 as shown indicatively in the Site Plan, to provide continuous BFA sheltered connectivity between HDB housing estate and the proposed development. The POB shall be provided with staircase and lift at both ends within public street and built to LTA's prevailing standards. The POB shall be under the maintenance of the Successful Tenderer until such time it is handed over to LTA after the 1-year maintenance period.

PART VI

6 OTHER REQUIREMENTS

6.1 PUBLIC TRANSPORT SECURITY REQUIREMENTS

LTA requires the Successful Tenderer to comply with the following requirements:

Bus Interchange

The general security requirements for the Bus Interchange are as follows. The detailed specifications will be conveyed when the building proposal is received:

- i) Exterior of Bus Interchange (i.e. covered linkways, buildings)
 - a. Proposed Structures from the development shall not aid intrusion into the Bus

Interchange by creating a hand hold / foot hold that allows intruders to circumvent the existing physical measures put in place.

- b. The proposed structure shall not obstruct, obscure or otherwise render ineffective, the coverage of any CCTV cameras.
- ii) Development linking to Integrated Bus Interchange:
- a. The interface connection (entrance) to the Bus Interchange shall be secured by a security shutter.
 - b. There shall be provision of CCTV coverage for this entrance which shall be aligned with the VSS standards.

The Successful Tenderer shall also refer to the LTA Agreement for Design and Build Of The Bus Interchange and Associated Works at Hougang Avenue 10.

CR08 Station

The general security requirements for the CR08 Station are as follows. The detailed specifications will be conveyed when the building proposal is received:

- iii) Exterior of CR08 Station (i.e. covered linkways, buildings)
- a. Proposed structures from the development shall not aid intrusion into the station by creating a hand hold/ foot hold that allows intruders to circumvent the existing physical measures put in place.
 - b. The proposed structure shall not obstruct, obscure or otherwise render ineffective, the coverage of any CCTV cameras.
- iv) Development linking to CR08 Station via underground passageway:
- a. The interface connection (entrance) to the station shall be secured by a security shutter.
 - b. There shall be provision of CCTV coverage for this entrance which shall be aligned with the VSS standards.

6.2 TRANSPORT IMPACT ASSESSMENT (TIA) & WALKING AND CYCLING PLAN (WCP)

LTA requires the Successful Tenderer to comply with the following requirements:

- i) The Successful Tenderer shall at his own cost and expense, carry out a Type 2 TIA study and submit it to LTA for approval. The purpose of the TIA is to identify the traffic impact of the development on the surrounding transport network and to recommend necessary measures to mitigate the potential negative impact. The TIA is to include the study of bus lanes along Hougang Central (Minor) to support bus movements, and to study mitigation measures to manage resultant traffic impact (refer to Appendix C Clause 5.3). The TIA study will determine the details and extent of required works along the public roads, including the internal arrangement for the different accesses (e.g. whether the driveways of the commercial access and residential accesses should be interconnected or co-sharing of accesses are required) as well as bus priority measures and interventions that are appropriate. The TIA shall take into account the Integrated Bus Interchange located within the Land.
- ii) The TIA shall be conducted by an experienced traffic consultant. The TIA study and report shall be done in accordance with the latest TIA Guidelines for Developments and Addendum as stipulated by LTA and fully satisfy the prevailing standards and

requirements of LTA. The scope and details of the TIA are to be determined in consultation with LTA and the TIA shall be conducted and concluded prior to finalisation of the architecture design layout, access arrangement, and road frontage features at the Design Gateway submission stage. The TIA shall take into account future developments in the area. The Successful Tenderer shall, at his own cost and expense, be responsible for the necessary localised road improvement works in the vicinity of the Land, recommended by the TIA study to support the development.

- iii) The Successful Tenderer shall at his own cost design, fund and construct all other road improvement works as recommended in the TIA to support the development.
- iv) As part of the TIA, the Successful Tenderer shall submit a Walking and Cycling Plan (WCP) to LTA and URA for approval. The purpose of the WCP is to ensure that pedestrian and cycling connectivity is well-considered and an integral part of the design of the development. Direct and seamless connection to transport nodes and related facilities shall be provided for whenever possible. Details of the WCP submission can be found in LTA's Code of Practice for Street Works Proposals relating to Development Works.

6.3 RAIL REQUIREMENTS & PROTECTION

As the development will fall within the railway protection zone/ corridor, LTA requires the Successful Tenderer to comply with the following requirements:

- i) The Successful Tenderer shall obtain approvals for development and building proposals on the Land from LTA under the prevailing Rapid Transit Systems (Development and Building Works in the Railway Corridors and Railway Protection Zone) Regulations. A permit to commence works must be obtained from the Authority under Regulation 6 of the Rapid Transit Systems (Development and Building Works in the Railway Corridors and Railway Protection Zone) Regulations, before carrying out any building and engineering works.
- ii) The design and construction of the development and all associated construction works within the railway protection zone shall comply with the technical requirements in the Code of Practice for Railway Protection, the Rapid Transit Systems (Development and Building Works in the Railway Corridors and Railway Protection Zone) Regulations and any conditions under the plans and amendments cleared by the LTA.
- iii) The Successful Tenderer shall also obtain clearance from the LTA before carrying out any restricted activities in the Schedule of Rapid Transit Systems (Railway Protection, Restricted Activities) Regulations. This includes lifting works, soil investigation works, etc. The restricted activities shall meet the requirements in the Guide to Carrying Out Restricted Activities within the Railway Protection and Safety Zones.
- iv) The Successful Tenderer shall refer to **Appendix C(II)** for more details on LTA's rail requirements for the Land.

6.4 CR08 STATION WORKSITES AND INTERFACING

LTA requires the Successful Tenderer to comply with the following requirements:

- i) The Successful Tenderer shall coordinate and interface with LTA's Appointed Contractors (including CR112 and SWCs) and their Consultants, utility agencies, statutory authorities, and all relevant parties in finalizing their Development design and their construction methodology at the interfacing areas.
- i) The Successful Tenderer shall note that CR112 works have commenced and in progress during the period of this Contract and will run concurrently with it for all or part of the Contract period. The Successful Tenderer is to coordinate and make provision

for both CR112 and the Successful Tenderer's concurrent works.

- ii) The Successful Tenderer shall note that LTA would require various worksites within the Land at various phases, to facilitate LTA's construction of the CR08 Station. The worksites and duration required by LTA are as shown in the Phasing Plan.
- iii) The Successful Tenderer shall coordinate with CR112 for his worksite and access requirement, and upon the Successful Tenderer's confirmation of his construction timeline, approach and methodology. The Successful Tenderer shall take into consideration CR112's construction progress, traffic diversion stages and worksite requirements as shown in the Temporary Traffic Diversion Plans.
- iv) The Successful Tenderer shall note that CR112's Traffic Diversion Schemes are notional, and the Successful Tenderer shall coordinate with CR112 for the traffic diversion stages and ensure no adverse impact to CR112's works, including but not limited to CR112's traffic diversion works along Hougang Central, Hougang Central (Minor) and Hougang Avenue 10.
- v) The Successful Tenderer shall note that CR112's A&A works on NE14 Station are in progress. The Successful Tenderer shall coordinate with CR112 for his working space/ access requirements and not impeding on CR112's A&A works on NE14 Station.\
- vi) The Successful Tenderer shall refer to **Appendix C(III)** for more details on LTA's interfacing requirements.

6.5 PRODUCTIVITY IMPROVEMENT

The Successful Tenderer is required to comply with the productivity improvement as stipulated under the Building Control (Buildability and Productivity) Regulations for the proposed development on the Land as set out in Appendix D Clause 11.0.

6.6 STORAGE AREA FOR PREFABRICATED PREFINISHED VOLUMETRIC CONSTRUCTION (PPVC) MODULES

If the PPVC method of construction is adopted, the Successful Tenderer is required to set aside some space within the Land for storage and/or holding area for PPVC modules. No additional space outside the Land will be granted on TOL basis for this purpose.

6.7 CONDITIONS AND REQUIREMENT FOR ENGINEERING WORKS AFFECTING HDB PROPERTIES

- i) For engineering works that affect HDB properties, the Successful Tenderer / Qualified Person (QP) in charge of the engineering works shall submit to HDB an engineering works plan before the commencement of work. The engineering works plan shall be prepared, signed and supervised by the Successful Tenderer / QP. The following shall be included in the engineering works plan:
 - a. Layout plan including site boundaries and cross-sectional details of works;
 - b. Layout plan and cross-sectional details of retaining structure and temporary support;
 - c. Method Statement of Construction;
 - d. Design calculations for the works that affects HDB property;
 - e. Soil investigation report of the site;

- f. Proposal for monitoring the effect of the works on HDB property;
- ii) The Successful Tenderer / QP shall be fully responsible for the construction of all the works as shown in the works plan. The Successful Tenderer /QP shall also be responsible for carrying out the works in the manner as stated in the method statements.
- iii) The Successful Tenderer / Contractor shall submit a Pre-Construction Survey Report to the relevant Town Council and the nearest HDB Branch before the installation of instrument on HDB property or the commencement of works.
- iv) The Successful Tenderer / Contractor shall highlight to Town Council on defect(s) that may have structural or public safety concerns and/or require close monitoring.
- v) The Successful Tenderer /QP shall submit a Building Impact Assessment Report to HDB (Building & Infrastructure Group) before the commencement of the works.

6.8 INSTRUMENTATION MONITORING

HDB requires the Successful Tenderer to comply with the following requirements:

- i) For geotechnical building works that affect HDB properties, the Successful Tenderer / QP shall ensure that the proposed works do not affect the integrity or stability of the foundation and structure of HDB property. During the progress of the engineering works, the Successful Tenderer / QP must provide adequate means of instrumentation to monitor the effect of the engineering works on HDB property. The Successful Tenderer / QP shall submit the type and location of such monitoring instruments and frequency of reading to HDB for clearance. The physical movement to be monitored shall include but not be limited to the following:-
 - a. Lateral deflection of retaining structure;
 - b. Vertical deflection of column of HDB property;
 - c. Settlement of apron slab and beam of HDB property;
 - d. Levels of road or carpark or sewer manhole adjacent to HDB property;
 - e. Ground water level below / adjacent to HDB property;
 - f. Vibration movement in HDB property.

The Successful Tenderer / QP shall submit an instrumentation report to HDB every month until the completion of works.

- ii) Instrumentation on Fiber Reinforced Polymer (FRP) columns (if any)

For the purpose of instrument installation, the diameter of holes drilled must not exceed 10mm on the fibre reinforced polymer wrapped column. The minimum spacing between these drilled holes is 300mm, centre-to-centre. No ram setting is allowed on the columns.

- iii) Alert (Trigger) and Work Suspension (Allowable) Instrumentation Level

The Successful Tenderer / QP shall establish Alert and Work Suspension levels for the instrumentation reading of the physical movement mentioned in Clause 6.8(i) above. These Alert and Work Suspension instrumentation level readings shall be made known to HDB before the commencement of works. On breaching of Alert level at any location on site, the Successful Tenderer / QP is required to inform HDB and follow up with a report to HDB reviewing the movement and predicting further movement up to

completion of the works. Where necessary, the Successful Tenderer / QP shall submit to HDB for clearance, a proposal to mitigate further movement or install additional monitoring. On breaching a Work Suspension level at any location, the Successful Tenderer / QP shall stop the works immediately. The Successful Tenderer / QP shall immediately inform HDB and implement measures to mitigate further movement. The Successful Tenderer / QP shall allow the work to continue only if the measures implemented are proven to be effective by the relevant Authorities. The monitoring of movements shall be inclusive of another 6 months of monitoring after end of backfilling, shall be submitted to HDB.

iv) Vibration

The Successful Tenderer / QP shall ensure that the proposed works or method of working does not cause undue vibration or unease and discomfort to HDB residents and damage to HDB property. The Successful Tenderer / QP shall take steps to minimise the magnitude and frequency of any such vibrations. If vibration is expected from the proposed works, the Successful Tenderer / QP shall submit to HDB detailed calculations showing the magnitude, frequency and the resultant load imposed on HDB property. The condition on instrumentation and monitoring contained in Clauses 6.8(i) to 6.8(iii) above shall apply.

v) Cessation of Instrumentation Monitoring

When the Successful Tenderer / QP intends to cease the instrumentation monitoring, Successful Tenderer / QP shall notify HDB and submit a PE endorsed closing report to cease instrumentation monitoring on HDB property.

Upon removal of the building monitoring instruments, the surface shall be reinstated to its original condition and Town Council shall be notified for inspection and take over after painting completed.

vi) Piling and Pipe Jacking Works

The Successful Tenderer / QP shall ensure that the method of piling, piling operation and pipe jacking do not affect the structural integrity or stability of the existing HDB buildings or any building under construction. Piling shall generally be constructed by non-displacement techniques such as augering. The stability of the ground shall be ensured by the use of appropriate measures designed by the Successful Tenderer / QP. Notwithstanding the method used in the piling work, the Successful Tenderer / QP shall review and closely monitor the technical parameters and Instrumentation level as stated in Clauses 6.8(i) to 6.8(iii) above. The Successful Tenderer / QP shall ensure that the noise generated as a result of the piling work is also kept to a minimum and within the limit set by the Relevant Authorities.

The Successful Tenderer / QP shall check the as-built plans on piling, footing, pile-cap and all related plans of the affected structures to ensure that their works do not encroach into existing piles, footings, pile-caps and other structures. A confirmation that such checks has been carried out shall be submitted to HDB (Building & Infrastructure Group) before work commences.

The structural drawings can be purchased at:

HDB Hub
480 Lorong 6 Toa Payoh Singapore 310480
Atrium 3rd Storey
Tel: 6490 3203
Email: hdb_sop@hdb.gov.sg

Attn: Officer-in-charge of Structural Drawings Plan

vii) Earth Retaining or Stabilising System, Excavation Work and Tunnelling Work

The Successful Tenderer / QP shall ensure that the construction of earth retaining or stabilising systems (ERSS), the excavation work or tunnelling work does not cause the lowering of ground water table or any soil movement underneath the HDB property. If the lowering of ground water table or soil movement is expected, the Successful Tenderer / QP shall ensure that the construction of ERSS, excavation work or tunnelling work does not cause the movement of HDB property to exceed the allowable building settlement or tilt movement as specified in the relevant building codes, conditions or requirements imposed by the relevant Authorities. The Successful Tenderer / QP shall also install recharge wells if required and submit to HDB detailed calculations showing the resultant load imposed and the corresponding maximum movement on HDB property. The conditions of instrumentation and monitoring set out in Clauses 6.8(i) to 6.8(iii) above shall also apply to ERSS, excavation work and tunnelling work.

6.9 SERVICES AND SOIL REPORT

The information on existing services and soil report is indicative only. HDB shall not be liable for any damages suffered or expenses incurred as a result of the information given and shall not be held responsible for their accuracy. There may also be departures from the courses and there may also be other findings of which no record is held. The Successful Tenderer is advised to carry out his own site verification at his own cost.

For underground services lines, the Successful Tenderer shall also carry out his own site verification and arrange and obtain approval from the relevant Competent Authorities and pay for the cost of any diversion or provision of the services including sewer lines etc. He shall be deemed to have included in his tender price such verification and diversion of services which may affect the development to meet the specifications of the relevant Competent Authorities.

All new services lines serving the development shall be contained within the Land boundaries. The approval of the relevant Competent Authorities must first be sought before any connection can be made. All costs incurred shall be borne by the Successful Tenderer.

There may be services within or near the Land. Prospective tenderers are required to carry out due diligence by purchasing the services plans from the respective service providers. Please contact the respective Services Providers for the services plans. For plans on electrical cables and gas, please approach the following Competent Authority and Public Utility Licensee for details, as they would like to keep a record of the parties who view the plans:

Electricity and Gas

SP PowerGrid Ltd

Mapping & Earthworks Administration Section
2 Kallang Sector
Singapore 349277
Tel: 6916 5022
Email: mea@spgroup.com.sg

All applications and requests for consultation, cable testing and diversion shall be submitted through the portal. Please visit <https://ebiz.spgroup.com.sg/index.html> to access the SP eBusiness Portal.

Singapore Telecommunications Limited (Singtel)

Singapore Telecommunications Limited
Outside Plant Engineering

375 Tanjong Katong Rd, #03-00
Blk 1 Tanjong Telecommunication Complex
Singapore 437132
Tel: 6342 5900 / Fax: 6440 6305
E-mail: g-plansale@singtel.com

More information on purchase of Singtel plant route plans are available at <http://info.singtel.com/earthwork>.

6.10 EXISTING FOOTINGS, OBSTRUCTIONS AND OTHER MATERIALS

There may be footings and other obstructions left in the ground. The Successful Tenderer shall at his own cost and expense, carry out his own site verification of the possible positions of the footings, obstructions and other materials and ascertain the effect of these on the development.

The costs of such verification, tests, removal of the possible footings, obstructions and other materials etc. which may affect the Development shall be fully borne by the Successful Tenderer.

6.11 SLOPES AND EARTH RETAINING STRUCTURES

The Successful Tenderer shall ensure that all slopes and earth retaining structures where required shall be designed to comply with the requirements of the relevant Competent Authorities. All slopes and earth retaining structures shall be kept within the boundary of the Land.

The Successful Tenderer shall submit the details and design calculations prepared by a Professional Engineer for any proposed slopes or earth retaining structures to HDB and to the relevant Competent Authorities for approval before commencement of works.

6.12 WORKING AREA

The Successful Tenderer shall confine the construction work within the boundary of the Land. The Successful Tenderer shall not cause obstruction to other parties who may be working around the Land at the same time.

Hoarding shall be put up by the Successful Tenderer to ensure the safety and well-being of pedestrians. These hoarding shall be maintained in good condition throughout the project completion period of the development.

6.13 WORK BY OTHERS / AUTHORITIES / AGENCIES CONTRACTORS NEAR / WITHIN VICINITY OF CONTRACT BOUNDARIES

The Successful Tenderer shall coordinate with adjacent land owners, contractors and sub-contractors regarding the shared maintenance of the existing facilities and other construction systems including road furniture and public or work accesses.

There will be other contractors working near/ within the vicinity of contract boundaries of the development. The Successful Tenderer shall be deemed to have knowledge of other contractors working near the contract boundaries and shall liaise / work with the Contractors on site to ensure any interfacing works with other contractors are carried out in a smooth and cordial manner. All interfacing works with other contractors' works are deemed to be included in the contract. No claim for additional costs and extension of contract/phases period time would be entertained on these grounds.

The Successful Tenderer shall be responsible for all necessary coordination, liaison, provision of attendance, accesses, etc. with all relevant Authorities / Agencies contractors and their subcontractors for the satisfactory completion of works.

6.14 WORKING SPACE FOR HDB / PUB / LTA CIVIL ENGINEERING CONTRACTORS

The Successful Tenderer shall note that there will be future road construction/ drain works /sewer/infrastructure works at the vicinity of the boundary of the development.

The Successful Tenderer shall take note of the working spaces near the development boundary for the main road/drain works/ sewer works / signalised pedestrian crossing / bus bay and bus stop shelter/infrastructure works carried out by HDB / PUB / LTA Civil Engineering Contractor. The Successful Tenderer would need to interface with the HDB / PUB / LTA Civil Engineering Contractor such that the progress of works at the interface by the respective contractors is not affected. The hoarding may be required to setback at least 4m from the development boundary to allow sufficient working space for HDB / LTA's construction of main road, drain and infrastructure works, subject to site conditions.

The State shall not be responsible for any delay in completion of the abovementioned proposed infrastructure works, whatsoever. The Successful Tenderer shall liaise with HDB for the details, expected completion and commissioning date of the abovementioned infrastructure works such that it will not affect the TOP/CSC of the development. The Contractor shall coordinate closely with HDB's Earthworks Contractors / Civil Engineering Contractors on the works timeline based on site progress, and relocate the hoarding upon completion of the infrastructure works.

Prior to commencement of hoarding works, the Successful Tenderer shall coordinate closely with the other contractors working near / within the vicinity of the contract boundaries of the development on the working space required for the construction of roads and drains fronting the development boundary.

The Successful Tenderer shall bear all the costs and expenses incurred arising from interfacing / facilitating the HDB / PUB / LTA Civil Engineering Contractor in carrying out the earthworks / service diversion works / main road / drain works / sewer works / signalised pedestrian crossing / bus bay and bus stop shelter / utilities services duct / infrastructure works. There shall not be additional claims by the Successful Tenderer. The Successful Tenderer shall include, but not limited to the following in the Tendered Sum:

- i) The building hoarding / noise barriers are to be shifted by the Successful Tenderer, and reconstructed to accommodate the earthworks/ service diversion works / main road / drain works / bus bay and bus stop shelter if and when applicable.
- ii) When the earthworks / service diversion works / main road / drain works / bus bay and bus stop shelter are complete, if and when applicable, the building hoarding / noise barriers have to be shifted back to the development boundary by the Successful Tenderer.
- iii) Where the need arises, the Successful Tenderer is required to provide all necessary washing facilities and manpower for vehicles exiting the project work site.
- iv) The Successful Tenderer shall confine the construction works within the boundaries and shall not cause obstruction to other parties who may be working around the site at the same time.
- v) Project Development Hoarding with lighting shall be put up by the Successful Tenderer to ensure the safety and wellbeing of pedestrians. These hoarding shall be maintained in good condition throughout the project completion period of the development. These hoarding shall not encroach into the clear width of the roadside footpath and/or cycling path.

- vi) Diversion of any existing sewer and other services within the site.
- vii) Any damages onto surrounding road construction / drainage / sewer / infrastructure works resulted from the Successful Tenderer's construction and / or by its project vehicles / equipment / machinery shall be made good at the Successful Tenderer's own cost, to the satisfaction of the HDB / PUB / LTA Civil Engineering Contractor and their respective client agency.

6.15 CLEANING AND MAINTENANCE OF PUBLIC OR HDB-MAINTAINED ROADS AND DRAINS

The Successful Tenderer/Contractor shall ensure that all roads used by him or agents, or by his sub-contractors or suppliers, or their agents (hereinafter referred to as "the Contractor's vehicles") or vehicles by other Contractors using the accesses, do not dirty the public roads or HDB maintained roads used by these vehicles. In this respect, it is the Contractor's responsibility to ensure that all such vehicles are properly cleaned before they move onto the public roads and HDB maintained roads.

The Successful Tenderer/Contractor shall maintain adequate manpower and washing facilities at the entrances / exits to the site to wash all vehicles entering and exiting the site.

The Successful Tenderer shall maintain the cleanliness of public or HDB-maintained roads and drains used by his vehicles throughout the project completion period. He shall construct a washing bay for the cleaning of earth-laden lorries before they leave the work site and shall be responsible for cleaning up all deposits left by his vehicles on the road. Adequate Earth Control Measures should be implemented at the Successful Tenderer's own cost to prevent any clogage or silty discharges into the public or HDB-maintained drains.

The Successful Tenderer shall be responsible for paying any fines imposed by the relevant Competent Authorities e.g. Environmental Health Department, Traffic Police etc.

6.16 PLANS OF PROPOSED DEVELOPMENT

The Successful Tenderer shall submit the design of the proposed development in both DWG and IFC formats to HDB for its endorsement on behalf of the Government as landowner before submission to the regulatory agencies for clearance at each Regulatory Gateway. The HDB shall have the right to require the Successful Tenderer to amend and modify the above-mentioned plans submitted by him.

6.17 DEVIATIONS FROM PLANNING REQUIREMENTS

The requirements set out in this Part relating to location, height, size, area or extent of uses, etc., are specified with a view to achieving the relevant planning objectives as outlined or indicated in the provisions in this Part. The Successful Tenderer may submit for the HDB's consideration alternative proposal to any such requirements. Where HDB is satisfied that the alternative proposal will also serve to achieve the planning objective relevant to the requirement, the Successful Tenderer may be allowed to adopt such an alternative proposal instead; in which event, the relevant provisions in this Part shall be deemed to be complied with. HDB however reserves the absolute discretion to decide whether or not to allow any alternative proposal to be adopted.

6.18 PUBLIC COMMUNICATIONS PLAN

The Successful Tenderer is required to carry out a public communications plan as part of the efforts to keep the local community informed of the development plans for the Land.

The local community is defined as:

- a) All residents of HDB flats, private condominiums / flats and landed houses;
- b) Management Corporation Strata Title (MCST) Committee of private residential developments and Neighbourhood Committees; and
- c) Administration of schools and other institutions

that fall within a 100m (approximate) radius of the Land.

In addition, it shall include the local Member of Parliament (MP), Advisor, Constituency Director of the Constituency and General Manager of Town Council.

The Successful Tenderer is required to meet up with the local community (when required) to explain the internal development layout of the project and the mitigating measures.

The Successful Tenderer is required to handle any feedback from public arising from the proposed development and the associated works.

Stage 1: Prior to the first submission of plans to HDB for Endorsement

Prior to the erection of any hoarding or commencement of any clearance and / or tree-felling on the Land, the Successful Tenderer shall distribute flyers to the local community containing the following information and ensure this information are accurately presented:

- a) Project information (e.g. type of development, number of units, storey height, vehicular access);
- b) Location map showing hoarding, construction access etc;
- c) Infrastructure works to be carried out and removal of existing facilities;
- d) Key milestones in the construction programme [e.g. site clearance, hoarding works, commencement and duration of piling works, expected date of issuance of Temporary Occupation Permit (TOP)];
- e) Details of proposed measures to mitigate the impact of development to the surrounding environment and users;
- f) Contact details of the Successful Tenderer for the community to highlight issues such as noise and dust arising from the construction activities, and to provide feedback on the proposal; and
- g) The hotline numbers of the relevant departments in BCA, HDB, MOM and URA.

Prior to the distribution of the flyer, the Successful Tenderer shall ensure that information as outlined above (a – g) are included in the flyer and inform the HDB on the distribution date with a copy of Form A as shown in **Appendix C (V)** and flyer.

After the distribution of the flyers, the Successful Tenderer shall submit to the HDB a duly completed Form B as shown in **Appendix C (VI)**. This Form B is to be submitted together with the first submission of plans to HDB for endorsement.

Upon submission of Form B to the HDB, the Successful Tenderer may proceed with the erection of hoarding, on which the contact details of the Successful Tenderer and the hotline numbers of relevant departments in BCA, HDB and MOM shall be prominently displayed.

Stage 2: Prior to the submission of plans to HDB for endorsement for WP application

After the grant of Provisional Permission by the Competent Authority under the Planning Act (Cap. 232) for the proposed development, the Successful Tenderer shall distribute additional flyers to the local community containing detailed information on the

proposed development. The information to be provided shall include those in the Stage 1 flyer as well as (but not limited to) the following:

- a. Schematic site layout showing the location of building blocks and facilities such as the bin centre, electrical substation, BBQ pits, etc.; and
- b. Indicative timeframe for the community to respond to the proposal, which shall be at least 2 weeks from the date the flyers are distributed.

The Successful Tenderer is required to submit a copy of the flyer for the HDB's approval before the distribution to the local community.

At least 2 weeks after the date of distribution of flyers, the Successful Tenderer shall submit to the HDB a duly completed Form C as shown in **Appendix C (VII)** and a duly completed Form D as shown in **Appendix C (VIII)**, which is a final collation of the feedback received on the proposed development, if any, together with an explanation of how the development proposal seeks to sensitively address the concerns raised by the local community. Both Forms C & D are to be submitted together with the submission of plan, which shall be made no earlier than 3 weeks from the date the flyers are distributed, to the HDB for endorsement.

After the endorsement of the submission of plans by the HDB, the Successful Tenderer is required to submit to the Competent Authority a copy of Form C & D as part of the application for planning approval.

The Successful Tenderer shall not commence structural works until the Competent Authority has given written consent for the Successful Tenderer to proceed to apply to BCA for the permit to commence structural works, or has granted Written Permission under the Planning Act 1998.

PART VII

7 DESIGN REVIEWS

Background

- 7.1 Located at the heart of Hougang, the development is envisaged to be a landmark development. It is thus important to ensure that the development meets the planning and urban design objectives for a well-designed and well-integrated development of appropriate quality and standard that will contribute to the enhancement of Hougang Town.
- 7.2 The Successful Tenderer's development proposal will be subject to design reviews by a design panel chaired by the HDB, before the project is submitted for clearances by regulatory agencies. The Design Review Panel will convene necessary meetings to review and provide inputs and comments on the overall building layout and architectural design particularly on the form/ massing, urban design, connectivity, integration with the surroundings, and landscaping/ boundary treatment. The design evaluation process is to be completed and HDB endorsement obtained before submission to the regulatory agencies. The prevailing Development Control Guidelines shall apply.

Design Evaluation Process

- 7.3 The design reviews shall include the following process:
 - i) Conceptual Design stage
 - ii) Design Development Stage before Provisional Permission (PP) submission
 - iii) Detailed Design Stage before Written Permission (WP) submission.

- 7.3.1 Prior to the briefings to HDB Design Review Panel, HDB may request for working meetings with the appointed Successful Tenderer to seek clarifications on the design.
- 7.3.2 Prior to the PP stage, the design review will address the broader urban design aspects of the development proposal in relation to the form, massing, pedestrian connectivity, vehicular circulation and landscaping. This is to ensure that the major issues affecting the layout of the proposal are addressed before the submission for PP. To prepare for the PP submission, plans, sections and elevations, as well as a massing model of appropriate size shall be submitted to show the development in relation to the adjacent sites and surrounding context.
- 7.3.3 Prior to the WP stage, the design review will focus on the building layout and architectural design aspects of the proposal including the appropriate use of building materials, finishes and external lighting. In preparation for the WP submission, plans, elevations and sections and an architectural model of appropriate size (if necessary) shall be submitted to show the architectural design of the development.
- 7.3.4 The Successful Tenderer will have the opportunity to clarify or propose alternatives to address the concerns raised throughout the Design Reviews and evaluation process. The alternatives, if assessed to be viable, may still be accepted by the HDB Design Review Panel and implemented by the Successful Tenderer.
- 7.3.5 Should there be any changes to the approved design of the development subsequently, including the location of M&E components, proposals affecting the urban design intent or public areas, the Successful Tenderer would be required to update and seek approval of the HDB Design Review Panel.

APPENDIX C(I)

LTA'S BI Agreement
<please refer to LTA Appendix zip folder>

APPENDIX C(II)

Rail Requirements for Hougang Central ITH
<please refer to LTA Appendix zip folder>

APPENDIX C(III)

CR08 Station worksites and Interfacing
<please refer to LTA Appendix zip folder>

APPENDIX C(IV)

LTA Proposed Drainage Works
<please refer to LTA Appendix zip folder>

FORM A
PUBLIC COMMUNICATIONS PLAN

Details of Developer		To:	<u>INSTRUCTION:</u>
Company Name:		Land Sales & Lease Administration	This form is to be duly completed and submitted to the HDB prior to the distribution of the Stage 1 flyer.
Address:		Housing & Development Board HDB Hub	
Tel no:		480 Lorong 6 Toa Payoh	
Email:		Singapore 310480	
Proposed Development:			
Lot no.: _____ TS/MK: _____			
Key milestone			Proposed date of commencement* (MM/YYYY)
1.	Send Stage 1 flyer to local Member of Parliament (MP) and Advisor		
2.	Distribution of Stage 1 flyer containing brief project information and contact details of parties specified		
3.	Submission of Form B		
4.	First submission of development proposal		
5.	Erection of hoarding / site clearance		
6.	Obtain grant of Provisional Permission		
7.	Send Stage 2 flyer to local Member of Parliament (MP) and Advisor		
8.	Distribution of Stage 2 flyer containing detailed project information		
9.	Submission of Form C		
10.	Submission of Form D		
11.	Construction schedule a) Piling b) Sub-structure c) Superstructure d) M&E works e) Finishes		
Name, Designation & Signature of Developer's representative			

* Subject to changes. The HDB shall be kept informed of any changes to the public communications plan.

APPENDIX C (VI)

**FORM B
DECLARATION BY THE DEVELOPER (FOR FIRST SUBMISSION OF PLANS TO HDB)**

<u>INSTRUCTION:</u> This form is to be duly completed and submitted to the HDB together with the first submission of plans for HDB's endorsement, which shall be made no earlier than 1 week from the date the flyers are distributed	
Details of Developer Company Name: Address: Tel no: Email:	To: Land Sales & Lease Administration Housing & Development Board HDB Hub 480 Lorong 6 Toa Payoh Singapore 310480
Proposed Development: _____ _____	
Lot no.: _____ TS/MK: _____	
I, _____ (Name), _____ (Designation), hereby declare on behalf of the developer that in accordance with Condition 6.18 of the Additional Conditions of Tender, flyers containing brief information on the project and the contact details of the parties specified in the said Condition have been distributed to the local community* on _____ (Date).	
Signature:	Date:

* Local community is defined and includes the parties specified in Condition 6.18 of the Additional Conditions of Tender

**FORM C
DECLARATION BY THE DEVELOPER**

(FOR SUBMISSION OF PLANS SUBSEQUENT TO THE GRANT OF PROVISIONAL PERMISSION)

<p><u>INSTRUCTION:</u></p> <p>This form is to be duly completed and submitted to the HDB together with the submission of plans to HDB subsequent to the grant of Provisional Permission, which shall be made no earlier than 3 weeks from the date the flyers are distributed.</p>	
<p>Details of Developer</p> <p>Company Name:</p> <p>Address:</p> <p>Tel no:</p> <p>Email:</p>	<p>To:</p> <p>Land Sales & Lease Administration Housing & Development Board HDB Hub 480 Lorong 6 Toa Payoh Singapore 310480</p>
<p>Proposed Development: _____</p> <p>_____</p> <p>Lot no.: _____ TS/MK: _____</p>	
<p>I, _____ (Name), _____ (Designation), hereby declare on behalf of the developer that in accordance with Condition 6.18 of the Additional Conditions of Tender, flyers containing detailed information on the development project and the contact details of the parties specified in the said Condition have been distributed to the local community* on _____ (Date).</p>	

Details of preliminary feedback received from the local community (if any):

Signature:

Date:

Local community is defined and includes the parties specified under Condition 6.18 of the Additional Conditions of Tender

**FORM D
CONSOLIDATED FEEDBACK ON PROPOSED DEVELOPMENT**

(FOR SUBMISSION OF PLANS SUBSEQUENT TO THE PROVISIONAL PERMISSION)

<p><u>INSTRUCTION:</u></p> <p>This form is to be duly completed and submitted to the HDB as part of the submission of the plans subsequent to the grant of the Provisional Permission, which shall be made no earlier than 3 weeks from the date the flyers are distributed.</p>	
<p>Details of Developer</p> <p>Company Name:</p> <p>Address:</p> <p>Tel no:</p> <p>Email:</p>	<p>To:</p> <p>Land Sales & Lease Administration Housing & Development Board HDB Hub 480 Lorong 6 Toa Payoh Singapore 310480</p>
<p>DC Reference: _____</p> <p>Proposed Development: _____</p> <p>Lot no.: _____ TS/MK: _____</p>	
<p>I, _____ (Name), _____ (Designation), hereby declare on behalf of the developer that in accordance with Condition 6.18 of the Additional Conditions of Tender, the table below has included all feedback that has been received from the local community, up to the date of the submission of this development application.</p>	

Feedback received from the local community and how the development proposal has sensitively addressed the feedback raised*:

Feedback Received from Local Community	Proposed Measures

Signature:

Date:

** This must include all feedback received up to the point of the submission of the plans to HDB.*

PROPOSED MIXED USE DEVELOPMENT COMPRISING A COMMERCIAL AND RESIDENTIAL DEVELOPMENT INTEGRATED WITH A BUS INTERCHANGE AND A TOWN PLAZA AT HOUGANG AVENUE 10/ HOUGANG CENTRAL

CONDITIONS AND REQUIREMENTS OF RELEVANT COMPETENT AUTHORITIES AND PUBLIC UTILITY LICENSEES (FOR INFORMATION OF TENDERERS)

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1.0 DEFINITION

The lease of the Land Parcel at Hougang Avenue 10 (“the Land”) is subject to the Additional Conditions of Tender and the Conditions of Tender for the Land contained in the Developer’s Packet.

2.0 GENERAL CONDITIONS AND REQUIREMENTS

- 2.1 The Successful Tenderer is required to consult and comply with all technical conditions imposed by the relevant authorities such as Urban Redevelopment Authority, Land Transport Authority, National Environment Agency, Public Utilities Board, SP Power Grid and the Singapore Civil Defence Force etc.
- 2.2 The Successful Tenderer for the Land is required under the said Conditions of Tender to ascertain the exact and detailed conditions and requirements of all relevant Competent Authorities and Public Utility Licensees in respect of the development thereon and shall at his own cost and expense observe and comply with the same.
- 2.3 Without affecting the generality of paragraph 2.1 above and without prejudice to the obligations of the Successful Tenderer as set out therein, the contents herein are provided for the information of the tenderers only. Whilst every care and attention has been taken in the compilation and preparation hereof, it does not warrant that the contents herein represent all the conditions and requirements of the relevant Competent Authorities and Public Utility Licensees in respect of the development on the Land or that they are free from errors or omissions whatsoever. The contents herein are subject to changes by the relevant Competent Authorities and Public Utility Licensees concerned and the onus lies on the Successful Tenderer to verify these conditions and requirements directly with HDB, the relevant Competent Authorities and Public Utility Licensees and comply with their prevailing conditions and requirements.
- 2.4 A summary of the initial services requirements of the relevant Competent Authorities and Public Utility Licensees is set out herein. It serves only as an indication of the possible work involved with regards to services, and is by no means exhaustive or final.
- 2.5 The Successful Tenderer shall ensure that the following requirements are complied with:
- 2.5.1 To consult and liaise directly with the relevant Competent Authorities and Public Utility Licensees regarding the actual locations of all service mains within the Land and on the requirements and conditions for services diversion, if any, and provision prior to the commencement of site work. All necessary precautions shall be taken by the Successful Tenderer to safeguard the service mains before they are diverted.
- 2.5.2 To engage his own licensed Cable Detection Worker and licensed Telecommunication Cable Detection Worker to carry out cable detection and if necessary to carry out trial trenches to locate any manholes and cable routes prior to the commencement of site work. The Successful Tenderer shall bear the cost of any diversion work.
- 2.5.3 To ensure that all service mains that do not need to be diverted are identified and provided with protection, if necessary, during the construction stage of the development. The cost of repairs to any damaged service main as a result of work carried out by the Successful Tenderer shall be borne by the Successful Tenderer.
- 2.5.4 To ensure that the relevant Competent Authorities and Public Utility Licensees are allowed free and unconditional access at all times to services that remain within the Land for the purpose of installation, maintenance, repair and improvement works and all other work and activities incidental thereto.

- 2.5.5 To make his own arrangements with the relevant Competent Authorities and Public Utility Licensees and pay for the fees and costs of any diversion and/ or "capping off" of existing services, provision of service mains and service connection, if any, in relation with the development.
 - 2.5.6 To provide for all the internal distribution for water, electricity, drainage and sanitary discharge for the development.
 - 2.5.7 To liaise with all the relevant Competent Authorities and Public Utility Licensees on upgrading the road reserves abutting the Land to ensure that the necessary roadside drains, sidetable, kerb, etc., are carried out in accordance with the prevailing Road Reserve requirements.
 - 2.5.8 To ensure that all proposed infrastructure is to be implemented in accordance to the requirements of the relevant Competent Authorities, and to initiate and complete the handover of the relevant infrastructure to the respective Competent Authorities upon completion.
- 2.6 The Successful Tenderer shall be responsible to carry out at his own cost and expense his own site investigation to verify whether there is any sub-structure or other obstructions e.g. footings, piles, tree roots, etc., in the ground of the Land, and ascertain their effect on the development.
 - 2.7 There may be some other existing services affected by the development. The Successful Tenderer shall inform the relevant Competent Authorities and Public Utility Licensees immediately and bear the necessary cost of diversion and/or "capping off" of these existing services, if any.
 - 2.8 In general, no structure shall be sited close to or over existing and proposed services. The Successful Tenderer shall comply with all requirements as stipulated by the relevant Competent Authorities and Public Utility Licensees.

3.0 REQUIREMENTS OF LAND TRANSPORT AUTHORITY (LTA)

LTA requires the Successful Tenderer to comply with the following requirements:

General

- i) All proposed street works, as well as proposed engineering/construction works within the road reserve shall be prepared/designed, submitted, supervised and constructed in accordance with Street Works (Street Works by Private Persons) Regulations, Street Works (Public Street Works) Regulations and the following prevailing standards and code of practice at the point of formal submission:
 - a. Code of Practice for Street Work Proposals relating to Development Works;
 - b. Code of Practice for Railway Protection;
 - c. Guidebook for Carrying Out Modification Work to Rapid Transit System Stations or Railway by Private Developer;
 - d. LTA Standard Details of Road Elements;
 - e. Materials & Workmanship Specifications for Civil & Structural Works;
 - f. Code of Practice for Road Opening Works;
 - g. Code of Practice for Traffic Control at Work Zone;

- h. Infrastructure Design Criteria;
 - i. Civil Design Criteria; and
 - j. Signage Reference Manual for Bus Interchange / Terminal.
- ii) The technical details, extent and completion date of such works shall comply with the requirements of the LTA and other relevant Competent Authorities.
 - iii) The Successful Tenderer shall carry out all the proposed works as detailed in the Additional Conditions of Tender (Technical).
 - iv) The conditions, requirements and information given are based on data available at the time of compiling the document and are given without prejudice to any changes that may subsequently occur. Land Transport Authority (LTA) disclaims any liability for any damage or loss that may be caused to any person or property directly or indirectly as a result of the conditions imposed herein.
 - v) The Successful Tenderer shall seek clearance from the Development & Building Control sub-group of LTA on the details of the development.

Bus – General Requirements

- vi) The Successful Tenderer shall comply to LTA's requirements to ensure the safety of change in/new bus movement and bus stop location, which arise from the development's works. To determine if the bus movements are safe, a swept path analysis, or a physical bus trial, would have to be conducted. Thereafter, if there are unsafe bus movements, the Successful Tenderer shall undertake the necessary modification to address the safety concerns.

Bicycle Parking Facilities

- vii) The Successful Tenderer is required to comply in full with the LTA bicycle parking requirement under the Parking Places (Provision of Parking Places and Parking Lots) Rules 2018. A guide for Bicycle Parking and related facilities can be found in the Code of Practice for Street Works Proposals relating to Development Works.
- viii) As a good practice, the Successful Tenderer should set aside a portion of the bicycle parking lots on the ground floor where it is freely accessible and visible to visitors and the general public for short term bicycle parking. The percentage of the short-term bicycle parking requirement can be found in Code of Practice for Street Works Proposals relating to Development Works and Code of Practice for Vehicle Parking Provision in Development Proposals.
- ix) The bicycle parking lots shall be securely anchored and non-removable. The Successful Tenderer may, however, propose alternative layouts and designs for LTA's consideration and approval. Bicycle parking lots should accommodate all types of Active Mobility devices.
- x) The Successful Tenderer should consider existing vehicular and pedestrian movement when locating bicycle parking lots within the development. Bicycle parking lots shall be segregated from pedestrian walkways, driveways and car park access to ensure safety of motorists, pedestrians and cyclists. It is advantageous to provide separate pathways for cyclists and motorised vehicles to avoid conflict between cyclists and other road users.
- xi) The Successful Tenderer is strongly encouraged to provide higher capacity lifts to cater to higher cycling demand. The recommended dimensions for such lifts can be found in Code of Practice for Street Works Proposals relating to Development Works.

- xii) The Successful Tenderer shall obtain clearance from the Competent Authority on all matters related to the bicycle parking facilities before commencing the construction of the bicycle parking lots.

End-of-Trip Facilities

- xiii) The Successful Tenderer is encouraged to provide end-of-trip facilities such as showers, lockers and changing rooms in close proximity to the bicycle parking facilities where appropriate.

Wayfinding Signage

- xiv) The Successful Tenderer is to provide a comprehensive wayfinding system to guide residents and visitors of the development to transportation nodes in the vicinity and towards the pedestrian and cyclist related facilities (e.g. bicycle parking) within the development. A guide for wayfinding signage and related facilities can be found in the Code of Practice for Street Work Proposals relating to Development Works.
- xv) The Successful Tenderer shall obtain clearance from the Competent Authority on all matters related to the wayfinding system before commencing construction of the development.
- xvi) The Successful Tenderer shall refer to LTA's latest version of Signage Reference Manual for Bus Interchange / Terminal. The Successful Tenderer shall receive the latest copy upon award.

Work Zone Safety

- xvii) Half-height hoardings shall be provided at corners and accesses to allow users to see one another clearly, ensuring that there is sufficient time to take any necessary evasive actions to avoid collisions.

Where existing pedestrian routes (covered linkways or footpaths, including paths to the existing Hougang MRT NEL station entrances, bus stops and taxi stand/ pick-up drop-off points) are affected by the construction, temporary paths with shelters should be provided as replacement. In addition, the Successful Tenderer is to provide column-free cantilever covered shelter linkways with lightings linking to the hoardings.

Internal Circulation

- xviii) The Successful Tenderer shall provide protected/ segregated path such that the internal pedestrian and cyclist circulation route into the development/ bicycle parking area does not share with the vehicular driveway.

Prefabricated Prefinished Volumetric Construction (PPVC) Modules/ materials/ machineries

LTA requires the Successful Tenderer to comply with the following requirements:

- xix) Feedback related to PPVC transportation activities
 - a. Feedback related to PPVC transportation activities shall be handled by the Successful Tenderer.
- xx) Delivery of PPVC Modules
 - a. The Successful Tenderer is to obtain a permit from LTA if the vehicle (with or without load) meets any of the following criteria:

- i. Having an overall width exceeding 3 metres (or 2.6 metres when travelling on controlled roads). Please visit <https://prompt.lta.gov.sg/WebUIPWAS/Home/Faq> and see Q.2 under the “Permit for Vehicle Movement” tab; or
 - ii. Having a rear overhang of length of 1.8 metres or 40% of the length of the load bearing vehicle (whichever is lesser); or
 - iii. Having an overall weight exceeding the vehicle type’s weight limit (please visit <https://prompt.lta.gov.sg/WebUIPWAS/Home/Faq> and see Q.1 under the “Permit for Vehicle Movement” tab)
 - b. In addition to a permit, Auxiliary Police Escort (escorted vehicle movement from 7 p.m. to 5 a.m. on non-expressways; or from 11 p.m. to 5 a.m. on expressways) is required if the vehicle (with or without load) also meets any of the following criteria:
 - i. Having an overall width of 3.4 metres or more; or
 - ii. Having an overall weight of 80,000 tonnes or more; or
 - iii. Having an overall height exceeding 4.5 metres
 - c. The Successful Tenderer shall comply with LTA guidelines “Special Vehicles that require Submission of Notice to LTA” on oversized vehicle movement.
- xxi) Oversized Vehicle Delivery Operation / Access Point
 - a. Deliveries are to be carried out outside of AM and PM peak hours (6.30am-9.30am, 5pm-8pm).
 - b. Strictly no parking or waiting of construction vehicles / staff vehicles by the road side.
 - c. All loading and unloading activities of PPVC shall only be carried out within the Land/ contained within the Land.
 - d. Ingress/ egress shall be taken off from Hougang Avenue 10.
 - e. Marshalls shall be present to help guide/regulate traffic and ensure smooth flow of vehicles.
 - f. There are existing public buses plying through this area and construction operations shall not obstruct public buses.
 - g. The Successful Tenderer / Contractors are to plan the traffic routes properly.
 - h. All traffic operation plan consisting of delivery of the PPVC modules, marshalling of traffic, etc. (road diversion, if any) shall be submitted to LTA for advice before implementation.
- xxii) First-time applicants must register through LTA.PROMPT via <https://prompt.lta.gov.sg/WebUIPWAS/Login.aspx> for access. Applications are to be made at least 3 working days in advance.

4.0 REQUIREMENTS OF CATCHMENT AND WATERWAYS DEPARTMENT (C&W), PUBLIC UTILITIES BOARD (PUB)

PUB requires the Successful Tenderer to comply with the following requirements:

- i) The Land is affected by a 1.8m(w) drainage reserve (DR). The indicative location of PUB's infrastructure can be found in PUB's services plans. The plans can be purchased online through the INLIS portal at <https://www.sla.gov.sg/inlis/#/>. The Successful Tenderer is advised to carry out thorough site investigation to determine the exact location of PUB's infrastructures.
- ii) The existing drain within 1.8m DR shall not be interfered with or altered until the proposed permanent diversion drain is completed and functional. As the proposed diversion drain will be constructed by LTA in conjunction with Cross Island Line MRT proposal, the Successful Tenderer shall liaise and coordinate with LTA on the programme of the proposed drainage diversion works.
- iii) The minimum platform level (MPL) for the subject site shall not be lower than 4.5m above Singapore Height Datum, or 1m above the adjacent final road/ground level for special facilities and developments with direct or indirect linkages to underground special facilities, or any other level as determined by PUB as in stated in the latest edition of the 'Code of Practice on Surface Water Drainage', whichever is the highest. As the proposed diversion drain will be constructed by LTA in conjunction with Cross Island Line MRT proposal, the Successful Tenderer shall liaise and coordinate with LTA to ensure the proposed minimum platform levels are based on future road levels.
- iv) The minimum crest levels for basements of commercial or multi-unit residential developments shall be at least 300mm above the MPL as stated above. The minimum crest level for entrances to the underground pedestrian network having direct or indirect underground linkage to MRT Stations, or other underground special facilities shall be 300mm above the MPL as stated above. The Successful Tenderer shall pre-consult PUB(C&W) on the required MPL before making DC/BP submission in CORENET or Design Gateway/ Construction Gateway/ Completion Gateway (where applicable) in CORENET X.
- v) In complying with the MPL requirement, thorough investigations of the Land shall be conducted to determine suitable platform profiles to ensure that the runoff within, upstream of and adjacent to the Land can be effectively drained away without causing flooding within the Land and in the vicinity of the Land. Any proposal to level/backfill the Land shall be submitted to PUB(C&W) for comments and approval.
- vi) The Successful Tenderer shall locate and identify all existing drains within and in the vicinity of the Land. The existing drainage system within and in the vicinity of the Land shall not be interfered with, in any manner, without written approval from PUB(C&W). All works shall not cause damage or affect the structural integrity of the roadside/outlet drains.
- vii) The Successful Tenderer shall ensure that the design and construction of the proposed development within the Land will not cause damage and affect the structural integrity of the existing drains.
- viii) The Successful Tenderer shall ensure that the runoff within, upstream of and adjacent to the Land shall be effectively drained away without causing flooding within the Land and in the vicinity of the Land.
- ix) The Successful Tenderer shall take due care and precautionary measures to ensure that no damage, settlement or any adverse impacts occurs to any existing drain/drainage facilities in the course of the works. Free flow of water in the drains shall be maintained at all times. Any damages caused to the drainage structures shall be reinstated at the Successful Tenderer's own cost to the satisfaction of PUB(C&W). The Successful Tenderer shall carry out an impact assessment to establish the influence zone of the proposed works which affect the existing drains and drainage facilities. The impact assessment to be submitted to PUB shall be endorsed by a qualified person (QP).

- x) Pre-work and post-work surveys shall be submitted to PUB and shall cover drains/drainage facilities in the area affected by the work (and shall extend to at least the area within the second reserve of the MRT lines - if applicable). All drains/drainage facilities shall be located and identified. The survey shall show the levels of the drains/drainage facilities and shall be accompanied by a set of photographs showing the conditions of the drains/drainage facilities. All survey work shall be carried out by a Registered Surveyor.
- xi) The Successful Tenderer shall carry out soil instrumentation for monitoring the soil/geo-technical/structural movements or changes at and around the worksite in particularly existing drains/drainage facilities throughout the contract period. The Successful Tenderer shall set the critical alert levels and put in place a contingency plan to rectify any damages to the drains/drainage facilities. The soil instrumentation shall be monitored daily and weekly summary reports of the results of the soil instrumentation shall be submitted to PUB. Any breach of the alert levels and/or anomaly found in the reports shall be immediately reported to PUB and rectify immediately to the full satisfaction of PUB. Details of the contingency plan including the schedule of works and organisation chart of the developer/developing agency and consultant/contractor shall be submitted to PUB before commencement of works.
- xii) In the event of breach of alert levels and/or anomaly in the soil instrumentation results, the Successful Tenderer shall alert PUB immediately and activate the contingency plan to mitigate and rectify the situation. The analysis and rectification reports of the affected drains and drainage facilities shall be submitted to PUB for comments/approval.
- xiii) The Successful Tenderer shall conduct a joint visual inspection and any defects identified shall be made good to the full satisfaction of PUB and shall follow up with an incident report for the affected drains and drainage facilities within 3 days including remedial/repair works. If necessary, briefing/meeting shall be conducted by the Successful Tenderer to address the damage and follow up actions to rectify the situation.
- xiv) The method of construction of temporary drains and/or drains affected by the works shall be submitted to PUB for comments and approval before commencement of the works. Upon completion of the works, post-condition survey and topography survey of the affected drains shall be submitted and PUB may request for joint site inspection of the rectification works.
- xv) The Successful Tenderer shall inform PUB in writing at least one week before the commencement of any work at the Land which affects drains.
- xvi) The planning, design, construction activities and procedures for plan submission shall comply fully with the requirements as stipulated in the prevailing Code of Practice on Surface Water Drainage and The Sewerage and Drainage (Surface Water Drainage) Regulations 2007 and any subsequent addendum to the Code of Practice. The Code of Practice can be downloaded from the PUB website at <https://www.pub.gov.sg/Professionals/Resources/Code-of-Practices>.
- xvii) The topography of the Land shall not be changed without the approval of PUB.
- xviii) The Inter-Ministerial Committee on Climate Change endorsed the proposal for drainage design to protect catchments for the projected 75th percentile increase in rainfall intensity due to climate change. Based on the asset life of the drain of 50 years, this corresponds to a 25% increase in rainfall intensity and the revised rainfall intensity incorporating the additional 25% increase shall be used in the design of the public drainage infrastructure.

All affected drains and Drainage Reserves (location and alignment) and their respective sizes shall be indicated in the detailed plan drawings. Details such as inverts/copers of affected drains, adjacent ground levels and amount of soil cover shall also be indicated in the detailed submission to PUB. All drain crossings within road reserves (e.g. culverts and

roadside drains) shall be clearly highlighted in the plans. Detailed proposal plans shall be submitted at the detailed planning stage for PUB's comments and clearance before the commencement of works.

- xix) The Land shall discharge to the roadside drain along Hougang Avenue 10. The Successful Tenderer shall further consult PUB (C&W) for the discharge point.
- xx) Industrial, commercial, institutional and residential developments greater than or equal to 0.2 hectares in size are required to control the peak runoff discharged from the Land. The maximum allowable peak runoff to be discharged to the public drains will be calculated based on a runoff coefficient of 0.55, and for design storms with a return period of 10 years and for various storm durations of up to 4 hours (inclusive). Peak runoff reduction can be achieved through the implementation of ABC Waters design features and structural detention and retention features, such as:
 - a. Detention tanks;
 - b. Retention/Sedimentation ponds;
 - c. Wetlands;
 - d. Bioretention swales;
 - e. Porous pavements;
 - f. Bioretention basins or rain gardens, etc.

The Qualified Person (QP) shall be required to submit details (calculations and/or hydraulic model results) showing how the proposed system meets the required peak runoff rates. Due consideration shall be given to meeting ABC Waters stormwater quality objectives, which will often require treatment of stormwater runoff using ABC Waters design features. For design guidance on the ABC Waters design features, the Successful Tenderer/QPs can refer to the ABC Waters Guidelines and relevant chapters in the Engineering Procedures, available on the PUB website.

- xxi) PUB has in 2006 launched the Active, Beautiful and Clean Waters (ABC Waters) Programme. As part of the Programme, PUB has launched ABC Waters design guidelines which provide ideas on how natural runoff treatment systems termed ABC Waters design features such as rain gardens, vegetated swales and bioretention swales can be integrated within a development. These features detain/slow down stormwater runoff and improve water quality by using plants and soil. They also enhance landscape and biodiversity of the development. Specific information on the design of these features can be found at the website: <https://www.pub.gov.sg/Professionals/Resources/Guides-and-Handbooks>.
- xxii) PUB encourages the implementation of ABC Waters design features in the development as well as the achievement of ABC Waters certification. Information regarding ABC Waters Certification can be found via the link: <https://www.pub.gov.sg/Professionals/Awards-and-Certification/ABC-Waters-Certification>.
- xxiii) If applicable, the design and construction supervision of ABC Waters design features as well as drawing up the maintenance plan for these features shall be carried out by an ABC Waters Professional.

The Successful Tenderer could contact Ms Kelly Sng (kelly_sng@pub.gov.sg) for issues related to ABC Waters design features.

- xxiv) Effective erosion and sediment control measures shall be provided by the Successful Tenderer and his QP shall advise him to provide such effective measures and facilities with

inputs from a Qualified Erosion Control Professional (including site management system and perimeter cut-off drain, silt traps, storage ponds, treatment plants, etc) to ensure clean discharge that complies with the statutory requirement. The proposed erosion and sediment control measures shall be submitted by a Qualified Erosion Control Professional (QECP) to PUB before commencement of works. All affected watercourses shall be desilted and cleared until completion of work. For reference, the information can be found on the website <https://www.pub.gov.sg/Professionals/Requirements/Earth-Control-Measures>.

xxv) Requirements for Water Catchment

- a. The Land is within Serangoon Water Catchment. The proposal shall not result in any loss of yield from the catchment area.
- b. Stringent pollution control measures shall be incorporated in the design and during the construction of the development.
- c. All sewage and sullage water shall be discharged into a public sewer.
- d. Bulk storage of toxic and hazardous materials shall not be allowed.
- e. If there is any earth filling work at the Land, use good earth free of any debris or construction waste materials. If sand is used for backfilling, do not use marine sand. Only washed sand with chloride content not exceeding 0.01% (by Weight) shall be allowed. Test reports on the chloride content of the washed sand shall be submitted to PUB(C&W) for records before commencement of work.

xxvi) Requirements for Bus Interchange

- a. All pollutive items shall be stored under shelters which shall be kerbed-up and properly contained. This is to ensure that no spills/leaks of wastes escape the proposed development and potentially enter controlled watercourses. All sullage water from the containment area shall be discharged into a public sewer.
- b. The site shall be designed to minimize the contamination of stormwater runoff. This includes having sheltered and perimeter kerbed areas for pollutive materials and activities.
- c. All contaminated stormwater runoff shall be collected and treated. Any discharges into watercourses shall comply with Allowable Limits for Trade Effluent Discharge to Controlled Watercourses under the EPMA (Trade Effluent) Regulations.
- d. Proper housekeeping is required, and the premises shall be kept clean and tidy at all times. All open ground (i.e. unsheltered areas) and drains in the premises shall be free of grease/oil/raw materials.

xxvii) Requirements for Proposed Vehicle Site Accesses

- a. The Successful Tenderer is to ensure all the vehicle site accesses are constructed as culverts for vehicular loading and designed in accordance with LTA's SDRE.

xxviii) Please contact Tan Leh Ho (email: TAN_Leh_Ho@pub.gov.sg), Ong Jing Yuan (email: ONG_JING_YUAN@PUB.GOV.SG) and Nurul Ain Binti Kamarudin (email: NURUL_AIN_KAMARUDIN@PUB.GOV.SG) from PUB(C&W) if you need any clarifications.

5.0 REQUIREMENTS OF WATER RECLAMATION (NETWORK) DEPARTMENT (WRN), PUBLIC UTILITIES BOARD (PUB)

5.1 General

- 5.1.1. The planning, design and construction and plan submission for sewerage works shall comply fully with the provisions of the Sewerage and Drainage Act 1999 and its Subsidiary Legislations, the requirements as stipulated in the prevailing Code of Practice on Sewerage and Sanitary Works (COPSSW) and all other sewerage requirements that may be stipulated from time to time by the Public Utilities Board (PUB).
- 5.1.2. The Successful Tenderer shall establish the actual locations and depths of all the sewerage system or sanitary facilities that may be affected or present on the Land Parcel by trial holes or other approved means. A thorough site investigation of the development site shall be carried out to determine the exact positions and levels of the existing public sewers/pumping mains prior to the commencement of any works. Sewers/pumping mains are herein after deemed to include manholes/chambers and other associated appurtenances.
- 5.1.3. No building/structures/piling/earth retaining structure, etc. (whether temporary or permanent), except lightweight and demountable elements (such as awnings, surface drain, compound boundary wall & fencing, planting troughs and link-way shelters) as concurred by PUB, shall be sited over or across any sewers/pumping mains without the approval of PUB. All proposed structures shall be kept as far away from the existing sewers/pumping mains as possible and no nearer than the minimum lateral distances as stipulated in the COPSSW or any later revised distances published in PUB's website or via circulars.
- 5.1.4. Where there are specified activities within the public sewer corridor (i.e. 10m for sewer/pumping main of diameter <900mm, 20m for sewer/pumping main of diameter \geq 900mm and 40m for DTSS tunnel) as stipulated in the COPSSW, a written approval from Director, Water Reclamation (Network) Department of the PUB should first be obtained before carrying out the specified activities at the site. QP shall make a Protection of Water and Sewer Pipes (POWS) submission via PUB's Business & Professional (B&P) Portal at <https://eservices.pub.gov.sg/bpp> prior to any commencement of the specified activities. The applicant shall refer to the COPSSW for the technical requirements on sewer protection.
- 5.1.5. All practical measures shall be taken to protect the public sewers/pumping mains from damage during construction works. The requirements for protection of public sewerage system can be found in the COPSSW and the guideline on 'Prevention of Damage to Public Sewerage System' can be found in PUB website at https://www.pub.gov.sg/-/media/Images/Feature/Content-Pages/Professionals/Compliance/Applications/Revised_PUB_WRN_AdvisoryNotes_Mar_2023.pdf. The successful tenderer shall comply with PUB's requirements for protection of the existing sewers, pumping mains and DTSS tunnels & structures. The proposals to protect the public sewers/pumping mains shall be submitted to the Director, Water Reclamation (Network) Department of the PUB for approval before the works can be carried out.
- 5.1.6. No sewerage systems (including abandoned sewers and pumping mains, sensors, meters, equipment, instruments, etc. installed within manholes) shall be altered/interfered without the approval from Water Reclamation (Network) Department of PUB. Any proposal to divert the existing public sewers/pumping mains shall be submitted to the Building Plan Division (BPD) of the PUB for approval. The works to divert the public sewers/pumping mains shall be carried out by the Successful Tenderer at his own cost and expense. All existing lateral connections shall not be affected by the proposed diversion works at all times. The size of the new diversion sewers shall be determined by PUB.
- 5.1.7. The successful tenderer shall comply with the requirements for abandoning of disused sewerage system that is stipulated in the COPSSW and the "Standard Requirements for Abandoning of Disused Sewerage System" that can be found in the PUB website at <https://www.pub.gov.sg/-/media/PUB/PDF/Code-of-Practices-and-Submission-Guidelines/Sewerage-and-Sanitary->

[Works/STD_REQ_SEALING_SEWERCONN_ABANDONEDSEWERS_MANHOLES_PUMPING-MAINS_Apr2023.pdf](#) if there are relevant works involved. Details of the proposed abandonment/sealing works shall be submitted to the Director, Water Reclamation (Network) Department of the PUB for approval before commencement of works.

- 5.1.8. PUB has stipulated that manholes shall not be buried under any circumstances. Where there is a need to raise or lower any existing manholes, the successful tenderer shall liaise with the Network Management Branch (Tel No. 6517 2230) of Water Reclamation (Network) Department, PUB and carry out the necessary works at his own cost and expense. In Detailed Plan submissions, the QP shall provide details of the proposal including the surveyed existing manhole top and invert levels, proposed new manhole top level and manhole details. Upon completion of the manhole raising/lowering work, as-built drawings showing the surveyed final manhole top and invert levels and updated details of manhole details of the affected manholes shall be submitted to PUB.
- 5.1.9. The Successful Tenderer shall engage a registered surveyor as required by PUB to carry out survey on manholes within or around the development site where the ground and/or invert levels are not available or uncertain and provide the survey results to PUB.
- 5.1.10. The Successful Tenderer shall engage an appropriate QP (as defined under Regulation 3A of the Sewerage and Drainage (Sanitary Works and Sewerage Works) Regulations) to submit the proposal and detailed plans including the proposed sewerage system for the development to the Building Plan Division (BPD) of the PUB for obtaining the development control clearance and clearance certificate.
- 5.1.11. The Successful Tenderer shall engage a QP who is a PE (Civil engineering) to submit the detailed sewer plan showing the pipe size, alignment, invert level and gradient, etc to the Building Plan Division (BPD) of the PUB for approval, prior to commencement of work for the proposed sewer connection.
- 5.1.12. The Successful Tenderer is to comply with PUB's technical requirements and to seek approval/consent from all relevant Competent Authorities/affected land owners (such as the Housing and Development Board (HDB), Land Transport Authority (LTA), National Parks Board (NParks) and the Singapore Land Authority (SLA), private owners etc.) for the proposed works to be carried out beyond the development site if applicable.
- 5.1.13. The Successful Tenderer is strongly advised to accord high priority to the construction of proposed sewers/pumping mains and commence the detailed design/investigation of sewerage works at the start of the development. It is especially important to do so for sites with challenging conditions such as congested underground spaces, special requirements from authorities to be complied with, presence of other on-going construction/business activities. In doing so, the development would be more assured of the readiness of the sewers/pumping mains together as the completion of the main buildings.

5.2 Particular Requirements

- 5.2.1 Based on information given by the Water Reclamation (Network) Department of the PUB, there are existing drain-lines and sewers ranging from 150mm to 800mm diameters in/within the vicinity of the development parcel.
- 5.2.2 The existing 225mm diameter sewers, 150mm diameter sewers and drain-lines shall be abandoned and sealed watertight up to the first manholes GIS ID: 277491 & 277643 outside the development boundary if CCTV inspection or site investigation confirmed that no lateral connections from neighbouring lots are still connected to this sewer/drain-line.
- 5.2.3 The existing 225mm diameter sewer (GIS ID: 379250) that is running along/ closed to the boundary of the development plot serving the neighbouring lot shall not be abandoned.

- 5.2.4 The drain-line to sewer connection for the proposed development is to be made via a single point to the 800mm diameter sewer along Hougang Avenue 10 via MH3517649.
- 5.2.5 Where road widening is involved and results in a narrower sidetable, LTA shall allow manholes to be constructed on the carriageway in future if there is inadequate space in the sidetable. If the road widening is not carried out by LTA, the Successful Tenderer responsible for the road widening project shall be responsible to secure the abovementioned permission from LTA for future manholes to be constructed on the carriageway
- 5.2.6 Existing manholes currently located in the sidetable might end up on the carriageway after the road extension/widening works, LTA or the Successful Tenderer responsible for the road widening project shall divert such manholes to the sidetable.
- 5.2.7 All covered linkways erected above proposed or existing sewers shall be designed to be demountable, with bolted joints connections, to facilitate speedy future repair of the sewers.
- 5.2.8 All food establishments shall be provided with grease trap/interceptor of adequate capacity to prevent discharge of oils, fats and grease directly into the sewerage system in strict compliance with the prevailing COPSSW. The grease traps shall be properly and regularly maintained such that the effluent from the grease traps shall meet the standards for discharging into the public sewerage system.

6.0 REQUIREMENTS OF WATER SUPPLY (NETWORK) DEPARTMENT (WSN), PUBLIC UTILITIES BOARD (PUB)

PUB requires the Successful Tenderer to comply with the following requirements:

Submission of Plans

- i) If water supply is required, the Successful Tenderer shall engage a Professional Engineer/ Licensed Plumber to submit the Notification of WSI Works to PUB. The design of the internal water reticulation system shall comply with the Public Utilities (Water Supply) Regulations, Singapore Standard 636 – Code of Practice for Water Services and all other relevant statutory requirements.
- ii) The Land is in close proximity to proposed/ under-construction/ existing water pipes.

Water Supply Plan

- iii) The Water Supply Plan (WSP) shows the approximate positions of PUB's proposed/underconstruction/ existing water pipes of 100 mm diameter and above in the vicinity of the Land. There are 100mm and 200mm diameter watermains within the Land. Smaller water pipes to customers' premises / properties may not be indicated. The presence of water meters near the work zone is an indication of the presence of water pipes. The latest WSP is available on SLA's INLIS portal at <https://app.sla.gov.sg/inlis>. Notwithstanding, during the planning/design stage, the Successful Tenderer shall determine by means of trial holes within your worksite to ascertain the exact alignment and levels of all the proposed/underconstruction/ existing water pipes and consult PUB(WSN) at the contact information provided below. No structures are allowed above water pipes at all times as they may pose damage risks and/or impede future maintenance access.

Requirements for Carrying out Diversion of Water Pipes

- iv) If there are water pipes affected by the proposed development, PUB(WSN) will advise that the water pipes be diverted. Consultation for water pipes diversion must be made at least 6 months ahead of the proposed development and the cost of diversion of any water pipes shall be fully borne by the Successful Tenderer. Please be advised to engage a qualified

water pipe laying contractor with CR07 work head with at least 5 years of experience to carry out the diversion works.

Requirements for Carrying Out Works within the Water Pipe Corridor

v) If there are works within the water pipe corridor, the Successful Tenderer shall comply with the protection and submission requirements stated in the Advisory-Prevention of Damage to Water pipes <https://www.pub.gov.sg/Professionals/Requirements/Application>. Submissions to seek approval for the works shall be made via PUB's online portal, Protection Of Water and Sewer pipes (POWS) at <https://www.eservices.pub.gov.sg/bpp/account>.

vi) For queries on matters relating to water pipes, please contact PUB (WSN) officer at 6380 9832 or email to: PUB_WSN_NORTHBU@pub.gov.sg

For diversion of water mains, please contact PUB (WSN) officer Wang Ningxiang at wang_ningxiang@pub.gov.sg.

Water Conservation

vii) Water conservation measures as stipulated in the Public Utilities (Water Supply) Regulations and SS 636 – Code of Practice for Water Services shall be adopted.

viii) Water fittings (e.g. pipes, pipe fittings, valves, water storage tanks, taps and mixers (basin, sink/bib, shower), dual-flush low capacity flushing cisterns (LCFCs), flush valves, materials in contact with water, etc.) to be used in the development shall be tested for compliance with the standards and requirements as stipulated in PUB's Stipulation of Standards & Requirements for Water Fittings (PUB S&R) which is available for downloading from PUB's website at <https://www.pub.gov.sg/Professionals/Requirements/Water-Supply-Services/Water-Fittings>. Additionally, water fittings such as taps and mixers, LCFCs and flush valves shall be registered under the PUB's Mandatory Water Efficiency Labelling Scheme (MWELS).

ix) Only water fittings (i.e. taps and mixers, LCFCs, WC flush valves and urinal flush valves/waterless urinals) that are of at least 2-tick rating under PUB's MWELS shall be installed. The development should obtain the Water Efficient Building (Basic) Certification by PUB.

x) Unless with written permission by PUB, fixed or movable sprinklers are not allowed to be used to deliver any form of water supplied by PUB, including potable water, NEWater, raw water, effluent water, industrial water for watering any garden, lawn or other land including commercial market gardens, commercial nurseries, sports grounds, golf courses, race courses, public and club tennis courts. Where possible, the Successful Tenderer is encouraged to use drought tolerant plants.

xi) For non-domestic developments with estimated water requirements of at least 5,000m³/month, and government developments with estimated water requirements at least 3,000m³/month, private water meters in accordance to PUB's requirements to monitor water usage in the key areas as stipulated in the Fourth Schedule of the Public Utilities (Water Supply) Regulations shall be installed.

xii) Wherever possible, alternate sources of water (such as industrial water, high grade industrial water, sea water, recycled water, rainwater and AHU condensate etc) should be used to meet the non-potable water requirements of the development.

xiii) Wherever possible, water recycling system should be set up to reclaim water for reuse for non-potable purposes such as production process, toilet flushing, irrigation and as cooling tower make up water, etc. PUB provides financial support to organisations seeking out

efficient ways to reduce their water consumption. More details of funding can be found at <https://www.pub.gov.sg/Public/WaterLoop/Water-Conservation/Incentives-and-Grants>.

- xiv) Use non-water cooled systems (such as air-cooled, refrigerant-cooled, etc.) for cooling purposes wherever possible.
 - xv) Cooling towers should achieve minimum 7 and 10 Cycles of Concentration (COC) using potable water and NEWater respectively.
 - xvi) From 1 January 2024, the following requirements apply to new projects (including expansion of existing plants) that will consume at least 60,000m³ of water annually:
 - a. Minimum 50% of RR for wafer fabrication plants involved in front-end semiconductor manufacturing; and
 - b. Recycling of specified waste streams for electronic plants and biomedical plants.
- More details can be found at <https://www.pub.gov.sg/Public/WaterLoop/Water-Conservation/Mandatory-Water-Efficiency-Requirements>.
- xvii) Please contact Tay Zi Hui, Julia (email: Julia_TAY@pub.gov.sg) from PUB(WSN), if you need any clarifications.

7.0 REQUIREMENTS OF NATIONAL PARKS BOARD (NPARKS)

NParks requires the Successful Tenderer to comply with the following requirements:

General Requirements

- i) If the Successful Tenderer intends to carry out any regulated activities under the Parks and Trees Act and its Regulations that arise out of or pursuant to the use of the Land, he must seek the Commissioner of Parks and Recreation's ("Commissioner") approval before doing so.
 - a. Before seeking the Commissioner's approval, the Successful Tenderer is required to consult the Commissioner, through the Greenery and Development Planning Branch at NPARKS_GDP@nparks.gov.sg at the planning and design stage of the development works concerning the Land.
 - b. The Successful Tenderer is required to present the following at the consultation:
 - i) A survey plan (dated not more than 2 years from the launch of tender) of the Land and its peripheral roads, at a scale of at least 1:500. The plan must also clearly indicate the location, species, height and girth of trees at the Land; and
 - ii) All other relevant additional information such as plans on construction hoardings.
- ii) The Successful Tenderer shall note and adhere to the following requirements in respect of the green verges/ planting areas surrounding the Land. Further details of these requirements can be found in NParks' "Guidelines on Greenery Provision and Tree Conservation for Developments". It is available at [Guidelines on Greenery Provision and Tree Conservation for Developments](#).
 - a. The proposed development at the Land must be confined within the Land, and the development and its subsequent use shall not encroach upon the green verge(s), green buffer(s) and planting area(s) surrounding the Land. The Successful Tenderer must take steps to ensure the above is adhered to, including without limitation:

- i) Ensuring that the width of the green verges adjacent to the Land and the width of the planting areas within the Land shall be in accordance to LTA's standard road code for that category of road or aligned with the existing green verge along the road, whichever is wider, unless otherwise reflected in the Control Plan.
 - ii) Ensuring that the construction or provision of any vehicular ingress/egress, acceleration/deceleration/storage/vehicular lanes, services access, bus stops, and any structure required under statute to be erected to divert or reconstruct services or road features/elements, shall not affect the trees and plants located in the green verge(s) and planting area(s)/green buffer(s);
 - iii) Ensuring that the green verges are kept clear and shall be free from obstructions and encumbrances at all times, including without limitation bicycles parked on the green verges, illegal dumping, construction materials, or items left on the green verges;
 - iv) Ensuring that vehicular and service access points, pick-up/drop-off points, taxi lay-bys, loading/unloading bays and fire engine hard-standing areas are to be located within the Land and not within the green verges; and
 - v) Ensuring that there is no change of soil level to the green verges without prior approval from the Commissioner.
- b. The Successful Tenderer must also ensure that the development on the Land complies with the requirements for planting areas within the Land, including without limitation the following:
- i) The planting areas must be free from any encroachment above ground, and/or any structures or services are to be recessed to at least 2-metre below ground level and are not to slope with gradients steeper than 1:2.5.
 - iii) If there is any indication that the development works at the Land will affect the green verges / planting areas in any way whatsoever, the Successful Tenderer **must** seek the Commissioner's approval under the Parks and Trees Act (as set out in Clause 7.0(i) above) for the conduct of the works that will affect the green verges/ planting areas.
 - iv) The Successful Tenderer shall comply with all applicable planting provision and aeration requirements for open air parking at street level. Further details of these requirements can be found in NParks' "Guidelines on Greenery Provision and Tree Conservation for Developments". It is available at [Guidelines on Greenery Provision and Tree Conservation for Developments](#).

Other Technical Requirements

- v) There are existing roads Hougang Ave 10, Hougang Central and Hougang Central (Minor) adjacent to the Land.
- vi) In order to preserve the health of the tree(s) on the green verges adjacent to the Land, the Successful Tenderer shall consult NParks through the Greenery and Development Planning Branch at NPARKS_GDP@nparks.gov.sg on the tree protection criteria for roadside trees before any commencement of works.

8.0 REQUIREMENTS OF NATIONAL ENVIRONMENT AGENCY (NEA)

NEA requires the Successful Tenderer to comply with the following requirements:

General Requirements

- i) The Land is located within a water catchment area, where rainwater and surface runoff are collected in the downstream reservoir for treatment to produce drinking water by PUB. The development shall not cause pollution directly or indirectly to our water resources. Any activity that could cause contamination problem to our water resources shall not be carried out. Please also ensure that the requirements for developments in water catchment areas in **Appendix D(I)** are duly complied with.
- ii) Sewage and used water from the development shall be discharged into the public sewer. The Successful Tenderer / QP of the development shall check with PUB (Water Reclamation Network Department) on the point of sewer connection and the allowable discharge rate. Holding tanks shall not be used at locations served by the sewer network.
- iii) Refuse and other solid wastes generated from the development shall be collected by a licensed waste collector for disposal at an approved waste disposal facility. Please ensure that the proposed refuse storage and collection system (e.g. bin centre) is in compliance with the public health requirements stated in the Code of Practice on Environmental Health.
- iv) Abatement measures shall be provided for all proposed M&E equipment installed in the development to mitigate the impact of noise, smell, fume, vapour or heat flux from operations and maintenance of these equipment on residential and noise sensitive premises. The Successful Tenderer / QP shall ensure that the noise emitted from the operations of M&E equipment installed in the development does not cause nuisance to surrounding residential and noise sensitive premises. The Successful Tenderer / QP may take reference to the NEA's Technical Guideline on Boundary Noise Limits for Air-Conditioning and Mechanical Ventilation Systems in Non-Industrial Buildings for the noise limits. A copy of the said Guideline may be viewed at the following website: <https://www.nea.gov.sg/docs/default-source/default-document-library/technical-guideline-on-boundary-noise-limit-for-air-conditioning-and-mechanical-ventilation-systems-in-non-industrial-buildings---feb-2018.pdf>.
- v) In the event that cooling towers are to be used for the development, the development shall comply with the Environmental Public Health (Registrable Aerosol-generating Systems) Regulations 2021 and the Code of Practice on Environmental Health.
- vi) In line with the Singapore Standard on Code of Practice for Pollution Control (i.e. SS593:2013), when a site that had undergone past polluting activities which could pose any risks to public health, is to be redeveloped, rezoned or reused for a non-polluting activity, a study should be conducted on the site to assess the presence and extent of land contamination. If there are indicators that point to the presence of land contamination (e.g. visual and/or olfactory evidence) found at the Land, a site assessment study should also be conducted on the Land to assess the extent of land contamination. If the site assessment study shows that the Land is contaminated, the Land shall be remediated before it is redeveloped for residential or any non-industrial use, to render the land safe for the intended uses before commencement of re-development. The Successful Tenderer/QP shall comply with the site contamination study requirement if the Land meets the abovementioned conditions.
- vii) In accordance to the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guideline published in 1998: <https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf>, the electromagnetic field emission from all the electrical installations and underground electrical cables should not result in the general public being exposed to extremely low frequency (ELF) magnetic field strength above or anywhere close to the guideline values. Similarly, the World Health Organisation (WHO) has recommended that (i) "Provided that the health, social and economic benefits of electric power are not compromised, implementing very low-cost precautionary procedures to reduce exposure is reasonable and warranted" and (ii) "Policy-makers, community planners and manufacturers should implement very low-cost

measures when constructing new facilities and designing new equipment including appliances". Taking guidance from WHO, NEA encourages developers to explore the implementation of cost effective measures as a precaution to further lower exposure to ELF radiation when building new facilities or modifying existing facilities.

- viii) The development shall comply with all the applicable requirements and provisions of the Singapore Standard on Code of Practice for Pollution Control (i.e. SS593:2013), the Code of Practice on Environmental Health, the Environmental Protection and Management Act 1999, the Environmental Public Health Act 1987, the Energy Conservation Act 2012, the Radiation Protection Act 2007 and their Regulations.
- ix) Under the Environmental Protection and Management (Control of Noise at Construction Sites) Regulations, construction sites within 150m of hospitals, schools, institutions of higher learning, homes for the aged sick or residential buildings have to comply with more stringent construction noise limits, especially during the evening and night-time hours. Hence the Successful Tenderer/QP shall implement noise control measures during the construction period to ensure that the noise levels from the construction activities are within the noise limits and to minimise dis-amenity. In addition, construction sites within 150m of any hospital, home for the aged sick or residential building are not allowed to carry out construction activities from 10pm on Saturdays or eves of public holidays to 7am on the following Mondays or days after public holidays respectively..
- x) From 1 Apr 2025, a new project* that meets the following two criteria is required to have noise barriers installed along the perimeter of the worksite:
 - a. Construction project value of \$50 million and above (per project location), and
 - b. Worksite located within 75 meters of nearby sensitive premises (e.g. hospital, school, institution of higher learning, home for the aged sick or residential building).* Refers to tenders for construction projects that are published on and after 1 Apr 2025

The noise barriers to be installed shall meet the specifications stated [in the following circular: https://www.corenet.gov.sg/media/2392015/mandating-of-noise-barriers-at-selected-construction-sites.pdf](https://www.corenet.gov.sg/media/2392015/mandating-of-noise-barriers-at-selected-construction-sites.pdf). [If you have any enquiries on the requirement for noise barriers at worksites, please contact NEA at NEA_Noisebarrier@nea.gov.sg](mailto:NEA_Noisebarrier@nea.gov.sg).

Requirements for Commercial/ Residential Development

- xi) The proposed development is located in the vicinity of Paya Lebar Airbase, existing/future bus interchange, commercial developments and residential developments. Hence, the site has ambient high noise level attributed to air and road traffic, commercial activities, M&E equipment operations and community events/activities carried out in the vicinity. The Successful Tenderer/ QP shall factor the ambient noise level and other nuisance impacts in the planning layout and design of the proposed development, such as siting the proposed residential buildings as far away as possible from the nuisances sources, and incorporate mitigation measures in the proposed development to mitigate noise and other nuisances impact. The Successful Tenderer/ QP shall carry out a noise impact assessment (NIA) from both existing and proposed transport infrastructures to demonstrate that the noise level at residential buildings façade does not exceed 67 dBA (Leq 1 hour) and the indoor noise level does not exceed 57 dBA (Leq 1 hour) under natural ventilated condition with windows/sliding doors fully opened. The Successful Tenderer/ QP shall obtain NEA's NIA clearance at pre-submission subject to compliance with relevant planning requirements. The Successful Tenderer/ QP shall also inform or socialise the prospective buyers of the apartment units of the potential dis-amenities posed by the activities carried out in the vicinity of the Land. Abatement measures shall be provided to further mitigate the impact if nuisance sensitive uses are included in the development.

- xii) For any proposed food establishments (e.g. restaurant etc.), the Successful Tenderer shall ensure that the kitchen exhaust systems meet the design requirements stipulated in the Code of Practice on Environmental Health. Greasy/oily wastewater generated shall be discharged into the public sewer via an approved grease trap, which has to be sited outside food handling/preparation area. Refuse and food wastes should be collected and kept in a proper holding area/bin centre pending disposal by a licensed general waste collector.
- xiii) The proposed development shall be designed so that the operation of the proposed commercial development and any activities to be carried out at the proposed commercial development shall not cause nuisance to the nearby residential premises as well as the proposed residential developments within the development.

Requirements for Bus Interchange

- xiv) The Successful Tenderer/ QP shall plan the layout of the proposed bus interchange such that its uses will not pose any noise, dust, fumes, odour or other nuisance impacts to people in the vicinity, including future residents of the subject development. The Successful Tenderer/ QP should implement control measures in the proposed bus interchange to mitigate the nuisance impacts. Details of the proposed control measures shall be submitted to NEA (Development Control and Licensing Division) for clearance prior to planning submission to URA. In addition, the Successful Tenderer/ QP shall carry out a noise impact assessment (NIA) to demonstrate that the noise level at the existing residential buildings façade does not exceed 67 dBA (Leq 1 hour) and the difference between the predicted noise level and baseline noise levels are kept within 3 dBA. The Successful Tenderer/ QP shall obtain NEA's NIA clearance at pre-submission subject to compliance with relevant planning requirements.
- xv) Activities carried out at the integrated transport hub/ bus interchange shall not cause any noise, smell or other nuisance problems to the people residing in the vicinity. Servicing, repair, testing, maintenance, cleaning, washing and painting of equipment, machinery, generators, etc. shall not be carried out.

9.0 REQUIREMENTS OF MINISTRY FOR DEFENCE (MINDEF)

MINDEF requires the Successful Tenderer to comply with the following requirements:

- i) If the proposal entails solar panels installation, the Successful Tenderer shall ensure that the lighting system and solar reflectance from materials (e.g. facade cladding, solar panels etc) for the proposed development must not affect aircraft in flight. The Successful Tenderer shall ensure that any working/outdoor lightings and solar reflectance must be directed downwards and/or shielded to prevent causing glare and confusion to pilots. The Successful Tenderer shall undertake all necessary rectifications at its own cost and expenses to the satisfaction of the RSAF if the lightings are assessed by the RSAF to be a hazard to air navigation. The Successful Tenderer shall submit detailed plans on any glare-inducing installation to RSAF (Email: Height_Control@defence.gov.sg with the Subject Title: "Glare Proposal for AOD"), for comments prior to implementation.
- ii) The development should not tap on or affect any MINDEF sub-stations at all times.
- iii) As the Land is located in proximity to Paya Lebar Airbase, aircraft noise and vibrations should be expected. These effects should be taken into account in the development, and in particular, in the design of the facilities and operating equipment. If necessary, the Successful Tenderer should assess if a noise study should be carried out. The development must not impose any constraint on MINDEF or curtail its existing and future developments, operations and activities in any way.
- iv) All capital and operating costs or expenses incurred to meet all the above conditions and

requirements will be borne by the Successful Tenderer.

10.0 REQUIREMENTS OF FIRE SAFETY DEPARTMENT (FSD), SINGAPORE CIVIL DEFENCE FORCE (SCDF)

SCDF requires the Successful Tenderer to comply with the Fire Safety Act 1993 and its Regulations, the prevailing "Code of Practice for Fire Safety Precautions in Buildings" (Fire Code), the relevant Codes of Practices & Guidelines, and SCDF Circulars. These general fire safety requirements are also applicable to any proposed temporary usage or installation. In addition, the following conditions will apply where applicable:

- i) To consult SCDF on the specific design requirements if the premises is to store, handle, use, transport or import of hazardous materials, including petrol station or CNG station which may have impact within the premises or on the surrounding existing or new developments. SCDF may impose the Quantitative Risk Assessment study (QRA) and/or additional Fire Safety requirements, or disapprove such proposal if there is possible impact within the premises or on the surrounding developments.
- ii) To consult SCDF on any specific developments or structures having impact on SCDF operations e.g. deep basement works (which are more than 4 storey or more than 24 metres in depth), tunnel or any other special developments, etc. SCDF may impose additional Fire Safety requirements.
- iii) The Successful Tenderer shall ensure that their proposal will not affect existing other surrounding developments (neighbouring) such as their exit provision, sidelane / backlane, window openings [the unprotected openings requirements, i.e. the Successful Tenderer and their Qualified Person (QP) shall strictly observe these existing conditions and provide more setback if necessary to prevent fire spread] and fire engine accessway etc. The Successful Tenderer and their QP shall consult SCDF directly for those new proposed building structures to be sited near to common boundary line, as additional Fire Safety requirements may be imposed.
- iv) The Successful Tenderer shall ensure that the boundary line of petroleum service stations, either be an existing^[1] or going-to-build petrol station, shall be at least 50m from any residential building, or 90m from any place of public assembly.

^[1] For existing petrol service stations undergoing A&A works, the 50/90m separation distance stipulated in the Fire Code is not applicable if the fire safety work does not involve deviation from existing approved plan (1) tanker parking position; (2) tanker refilling point or position; (3) position or capacity of the underground tanks.
- v) For existing premises, the Successful Tenderer may wish to note that the SCDF's Plan Approval and Fire Safety Certificate (FSC) will have to be obtained if there is any change in use or involving any alteration / addition works. The Successful Tenderer shall ensure that the existing premises, including existing layouts and usages, have obtained the necessary Approvals from SCDF.
- vi) For lease extension, the Successful Tenderer is urged to engage their own QP in assisting them to obtain the SCDF's Plan Approval and Fire Safety Certificate (basing on the prevailing Fire Code) if it is not done so for the entire buildings / premises. The fire safety provisions and mitigation measures are essential for all buildings; it is particularly true for religious premises where congregation of general public is possible, and for premises with similar usage as Nursing Home & Childcare Centre where the occupants are vulnerable to emergency situations. (The Successful Tenderer shall engage the operator and see how to address the shared concerns before considering granting their lease extension application).

- vii) For applications of non-exclusive and limited religious use, the Successful Tenderer shall liaise directly with the building owner / management to ensure their proposed usage and number of occupants for that particular room / floor does not exceed the limit as originally designed & approved for. The Successful Tenderer shall also provide the full details to the building owner / management so that the Emergency Response Plan (ERP) can be updated accordingly.
- viii) For new road development (including road widening, realignment, road expunction & interim measures etc), it shall not affect or encroach upon any part of existing development compounds. For public fire hydrant, the Successful Tenderer is requested to liaise with PUB directly for any proposed relocation or erection of new fire hydrant.
- ix) For drainage system development (including widening, realignment, extension & interim measures etc), it shall not affect or encroach upon any part of existing development compounds.
- x) Before making any commitment (purchase/occupation or rental/lease etc) or commencement of any proposal, the Successful Tenderer shall engage QP to carry out a feasibility study to ensure the entire premises and new proposals are able to comply with all the Fire Safety requirements (the current Fire Code & other relevant standards/guidelines/circulars). The feasibility study shall also ensure those existing fire safety provisions of surrounding developments are not affected. The QP will then assist them to obtain the SCDF's Plan Approval and the Fire Safety Certificate (FSC). If the Successful Tenderer has any doubts or queries regarding the fire safety requirements or plan approval procedures, he may enquire the Fire Safety Department via SCDF_QP_Consultant@scdf.gov.sg.
- xi) For projects involving petroleum and flammable materials (P&FM) such as Chemical Plants, Petroleum Refineries and Buildings/Structures used for handling & storage of bulk P&FM, the Successful Tenderer and their QP shall provide the overall layout details to SCDF at SCDF Headquarters at 91 Ubi Ave 4, for further comments, as additional fire safety provisions and mitigation measures will be imposed. The Successful Tenderer and their QP may wish to consult Hazmat Department at (Email: Bryan_NG@scdf.gov.sg or Glen_Chua@scdf.gov.sg).

11.0 REQUIREMENTS OF BUILDING AND CONSTRUCTION AUTHORITY (BCA)

BCA requires the Successful Tenderer to comply with the following requirements:

Environmental Sustainability

- i) The BCA Green Mark Scheme is a green building rating system to evaluate a building for its environmental impact and performance. Under this scheme, a building will be assessed based on the level of environmental performance that can be achieved in its design and construction. More details are available at <https://go.gov.sg/gm2021>
- ii) The Successful Tenderer is required to incorporate energy-efficient, water-efficient and environmentally friendly design, technologies and practices to achieve a minimum BCA Green Mark Rating of Green Mark Platinum Super Low Energy (SLE) with exemplary performance under the Maintainability (Mt) section (i.e. obtain Maintainability Badge) for each development on the Land.
- iii) The Successful Tenderer is required to apply to BCA for assessment of the environmental features and performance of each development under the BCA Green Mark Scheme and achieve the rating of Green Mark Platinum SLE with Maintainability Badge. In the application under the BCA Green Mark Scheme, the Successful Tenderer is to submit all relevant building plans and documents to BCA and to comply with all requirements,

procedures, directions and requests, and pay all fees, charges and other amounts payable to BCA for, and in relation to, the assessment of each development under the BCA Green Mark Scheme. The successful tenderer is advised to render full co-operation to BCA, its officers, employees and agents in relation to the assessment.

Digitalisation

- iv) The Successful Tenderer is required to carry out building works for each development on the Land in accordance with the requirements of Integrated Digital Delivery (IDD) as set out in the Code of Practice on Buildability Addendum No 1 in relation to IDD.
- v) The Successful Tenderer is required to submit the preliminary IDD implementation plan to BCA for BCA's review within three months from completion of Design Gateway.
- vi) When submitting the plans of building works for a development on the Land to the Commissioner of Building Control for approval at Construction Gateway, the Successful Tenderer is also required to include the final IDD implementation plan as stipulated under the Building Control (Buildability and Productivity Regulations) 2011 and such IDD implementation plan must include the following:
 - a. the details of the five (5) IDD essential use cases that are adopted in respect of the building works; and
 - b. such other documents or information as may be required by the Commissioner of Building Control.

Productivity

- vii) The Successful Tenderer is required to adopt suitable productive technologies for the development to achieve a minimum level of 30% productivity improvement*.
- viii) The Successful Tenderer is also required to adopt the minimum level of use of prefabricated systems for the development on the Land as stipulated in the Building Control (Buildability and Productivity) Regulations 2011 as shown below:

a) Prefabricated structural systems of minimally advanced precast concrete system in respect of total structural floor area of the building works	65%
b) Prefabricated architectural systems in respect of total wall length of the building works	80%
c) Prefabricated mechanical, electrical and plumbing systems in respect of the total qualifying areas in the development as specified in the Code of Practice. The mechanical, electrical, and plumbing components or equipment are required to be manufactured and assembled in an accredited fabrication facility, in accordance with any accredited fabrication method.	65%
d) System formwork in respect of the total cast-in-place areas of super structural works	70%

- ix) A Productivity Concept Implementation Plan (PCIP), which demonstrates a minimum level of 30% productivity improvement*, is to be submitted to the Building and Construction Authority in the following manner:

*compared to the base figure for 2010 as set out in BCA's website (at <https://go.gov.sg/measuringprojectproductivity>)

- a) Within three months from obtaining clearance of Design Gateway, the Successful Tenderer is required to submit the Productivity Concept Implementation Plan (PCIP) to BCA as an Independent Submission before the Piling Gateway (where applicable) or Construction Gateway.
 - b) As part of the application for Construction Gateway, the Successful Tenderer is required to submit the final PCIP, by incorporating and highlighting any design changes, to BCA together with the application for Construction Gateway. Once the PCIP has been approved by BCA, the Successful Tenderer is required to design and carry out the building works in accordance with the approved PCIP under the Building Control (Buildability and Productivity) Regulations 2011.
- x) If the Successful Tenderer adopts Prefabricated Prefinished Volumetric Construction (PPVC) for the development, he shall:
- a. include in all options and agreements for the sale, sublease or disposition of the residential units within the Development such information as to highlight to the purchasers, sublessees or parties agreeing or intending to agree to accept from the Successful Tenderer the disposition of the residential units within the Development that the PPVC method is used for the Development and any resulting conditions of use of the residential units (arising from the use of the PPVC method), including but not limited to:
 - i) restrictions on hacking/alteration of load-bearing structures within the residential units;
 - ii) for localised chasing and drilling works on load-bearing structures within the residential units, the following shall apply:
 - 1. appointing a Professional Engineer (PE) to issue a formal letter affixed with PE stamp and signed prior to carrying out such works to confirm that strengthening of the structures will not be required and that the structural integrity of the building will not be affected by the proposed works. The PE shall supervise the works being carried out, and provide a further formal letter affixed with PE stamp and signed after the completion of such works stating that such works are satisfactory;
 - 2. obtaining clearance from the Management Corporation (MCST) of the Development prior to carrying out such works, and in the case where there is no MCST constituted in respect of the Development, obtaining clearance from the owner developer of the Development prior to carrying out such works
 - iii) keeping access panels (if any) within the residential units unobstructed to facilitate periodic inspections
 - b. Ensure that the PPVC which is used must conform to the requirements set out in the Code of Practice in relation to PPVC.
 - c. The PPVC system adopted is to be of a concrete system and must allow for flexibility for removal of internal walls in the event the homeowners want to make any

modifications to their units.

Buildability and Constructability Requirements

- xi) The Successful Tenderer is required to adopt labour-efficient designs and construction technologies to achieve the Buildability and Constructability requirements as set out in the Code of Practice on Buildability for the development on the Land.
- xii) Buildability considers the extent of standardisation, simplicity and integrated elements applied to buildings at the design stage and the potential impact of a building's design on labour usage. Constructability considers the level of adoption of labour-efficient construction methods and construction processes such as system formwork and climbable scaffolding which would result in savings in manpower and shorter construction time. More details are available at <https://go.gov.sg/bpregulations>.
- xiii) The Successful Tenderer is required to consult BCA early before the Piling Gateway (where applicable) or Construction Gateway, on the designs and productive technologies of the proposed development to meet the Buildability and Constructability requirements as set out in the Code of Practice on Buildability.
- xiv) The Successful Tenderer shall comply with the requirements, procedures, directions and requests of BCA and shall also render his full co-operation to BCA, its officers, employees and agents in relation to meeting the Buildability and Constructability Requirements.

Prefabricated Bathroom Units (PBU)

- xv) The Successful Tenderer is required to adopt Prefabricated Bathroom Units (PBUs) for 65% or more of the bathroom units in the non-landed residential component of the said development on the Land as stipulated under the Building Control (Buildability and Productivity) Regulations 2011.
- xvi) The PBUs which are used must conform to the requirements set out in the Code of Practice on Buildability in relation to PBUs.
- xvii) In situations where PPVC is adopted and the PPVC modules for the residential component of the development also contain bathroom units which conform to the latest Code of Practice on Buildability stipulated for both the PPVC and PBU units, the adoption of these modules can be counted towards meeting the required minimum levels of use for both the PPVC method and PBUs. The adoption of these PBU modules may also contribute towards meeting the minimum level of productivity improvement as stated in Clause 11.0 (vii).

Construction Quality Assessment System (CONQUAS)

- xviii) The Successful Tenderer shall be required to refer and submit the proposed development to BCA to be assessed for the construction quality of the building works under the Construction Quality Assessment System (CONQUAS).
- xix) The Successful Tenderer is to comply with all requirements, procedures, directions and requests of BCA and pay all fees, charges and other amounts payable to BCA for and in relation to the assessment of the construction quality of the development under CONQUAS. The Successful Tenderer is to render full co-operation to BCA, its officers, employees and agents in relation to such assessment under CONQUAS.

Quality Mark (QM) for Good Workmanship

- xx) The Successful Tenderer is required to apply for and comply with all the requirements under the BCA Quality Mark for Good Workmanship scheme in the non-landed residential

component of the development on the Land.

Barrier-Free Accessibility (BFA) & Universal Design (UD)

- xxi) The Successful Tenderer shall comply with the mandatory requirements specified under the prevailing Code on Accessibility in the Built Environment (Code).
 - a. All areas intended for access by residents, visitor or the public shall be made accessible for persons with disabilities in accordance with the provisions specified under the prevailing Code.
- xxi) Where there are direct pedestrian connections to adjacent developments, parks, walkways/linkways and commuter facilities like MRT station, public bus stops and taxi stands; whether underground, on grade or elevated, all such connecting routes must be made accessible for persons with disabilities.
- xxii) The development on the Land should be designed and constructed to be accessible and inclusive for diverse users, including persons with disabilities, the elderly and families with young children. The BCA Universal Design index self-assessment framework (UDi) evaluates the building's level of user-friendliness through its provision of user-friendly features. The Successful Tenderer is required to use the BCA Universal Design index (UDi) Checklist at the onset of design and strive to achieve higher UDi rating for the development. More details are available at <http://go.gov.sg/bcaudi>.

12.0 ELECTRICITY

- i) The Successful Tenderer shall liaise with the Transmission Licensee authorised under the Electricity Act for the electricity supply and any other electrical provisions required for the purpose of and in connection with the development.
- ii) The Successful Tenderer shall apply to the SP PowerGrid Ltd directly for the electrification scheme and any electrical substation, which need to be constructed within the Land to serve the development. The Successful Tenderer shall be deemed to have included in his tender price for the construction of the electrical substation(s).

13.0 TELECOMMUNICATIONS

- i) The Successful Tenderer shall liaise with the Telecommunication System Licensee authorised under the Telecommunication Act, for the telecommunication supply to the development.
- ii) The Successful Tenderer shall provide all facilities for telecommunication services, such as MDF room, Telecom riser ducts, lead-in pipes and manholes etc., within the Land. All Telecom facilities shall be provided according to the prevailing Info-communications Media Development Authority of Singapore (IMDA) Code of Practice for Info-communications Facilities in Buildings.
- iii) The Successful Tenderer is advised to consult the relevant Telecommunication System Licensees (e.g. Singapore Telecommunications Ltd, StarHub Ltd, StarHub Cable Vision Ltd, NetLink Trust, SP Telecommunications Pte Ltd, etc.) early during the planning stage of the development, on the location and diversion of existing Telecoms services.
- iv) The detailed Telecoms facilities plans for the development shall be submitted to and duly verified by Telecommunication Facility Co-ordination Committee (TFCC) through the CORENET e-submission system, and approved by the IMDA prior to the commencement of works.

14.0 GAS

General

- i) The Successful Tenderer shall liaise with a gas retailer on the requirements for gas supply to the Land. For reference, the information on gas pipeline network in Singapore and the list of gas retailers in the market can be found at <https://www.ema.gov.sg/our-energy-story/energy-market-landscape/gas> and https://www.ema.gov.sg/Licensees_Gas_Retailer.aspx.
- ii) The Successful Tenderer shall at his own cost and expense carry out trial trench / holes to determine the exact alignment and levels of any identified gas main within the Land and in the vicinity of the Land during the design stage and ascertain whether they will be affected by the development works. If affected, the Successful Tenderer shall liaise with the Gas Transporter to request for diversion.
- iii) The Successful Tenderer shall provide a suitable diversion corridor and the proposed corridor for the gas mains diversion works must be made available without any obstructions. The Successful Tenderer shall contact gasenquiry@spgroup.com.sg for diversion consultation if the gas mains are affected and bear the necessary diversion cost.
- iv) The Successful Tenderer shall submit a report to Gas Enquiry - gasenquiry@spgroup.com.sg, upon detecting any gas mains of which PowerGas have no records in the Land Parcel.

Particular Requirement

- v) The Successful Tenderer is to submit written notice to SP PowerGrid Ltd (Earthworks Surveillance & Patrolling Section) if the intent is to carry out earthworks in the vicinity of gas pipelines at least 7 days prior to commencing the earthworks. All necessary precautionary measures must be taken to prevent damage to our gas pipelines at the work site.
- vi) For further enquiries pertaining to the existing gas transmission pipelines, please email gastrans@spgroup.com.sg. Please refer to **Appendix D(II)** on “Notes for Working near Power Gas Transmission Pipeline” which is appended for the Successful Tenderer’s information.
- vii) Please refer to “Requirements for Distribution Gas Pipe Diversion Works” in **Appendix D(III)**, which is enclosed for the Successful Tenderer’s information.
- viii) For advice on gas pipe damage prevention, the Successful Tenderer may contact Earthworks Surveillance & Patrolling section during office hours at tel no. 69165119 or email espsection@spgroup.com.sg.

**POLLUTION CONTROL MEASURES
FOR PROPOSED DEVELOPMENT
WITHIN WATER CATCHMENT AREA****1 Storage of Toxic Chemicals**

- (a) No toxic or hazardous chemicals shall be used, stored or handled in the premises.
- (b) Storage of fuel may be allowed subject to provision of pollution control measures as stipulated in the Singapore Standard on Code of Practice for Pollution Control (i.e. SS593:2013).

2 Public Sewerage System

- (a) Public sewerage system shall be extended to serve the proposed developments.
- (b) All sewage, used water and trade effluent (e.g. wastewater) shall be collected and discharged into the public sewers in compliance with the Sewerage & Drainage Act and its Regulations.

3 Refuse Management System

The proposed bin centre or refuse holding area shall be designed in the manner such that refuse storage, handling and transfer activities (e.g. transfer of refuse from a collection cart to a compactor, etc.) are carried within a building equipped with pollution and nuisance control measures. In addition, all sullage water, including liquid from refuse compaction and wastewater from washing of refuse collection carts, bins, floors, etc. is to be discharged into the public sewer in accordance to the requirements imposed by PUB. The design of the refuse management system shall comply from the Code of Practice on Environmental Health.

4 Pollution Control Measures

The proposed developments shall be designed to ensure that all activities that generate trade effluent are carried out within buildings. All trade effluent generated shall be discharged into the public sewer in compliance with the conditions and requirements imposed by PUB, and not into any land or watercourse for storm water. In this respect, any proposed wash area in residential development, washing bay for vehicles in workshop, wash area for food preparation in eating establishment, etc. should comply with the above requirements.

5 Pollution Control Measures at Construction Stage

- (a) During construction stage, sewage, used water and/or trade effluent from the construction sites shall be discharged into the public sewer, and not into any watercourse for storm water or onto any land.
- (b) All washings activities shall be carried out within sheltered areas and used water and trade effluent generated shall be collected and discharged into the public sewer, and not into any watercourse for storm water or onto any land. For construction site where public sewer is not available, sewage, used water and trade effluent shall be collected in holdings tanks and subsequently, transported using a tanker or other means to a Water Reclamation Plant (WRP) approved by PUB for treatment and disposal.
- (c) No servicing and repairing of mechanical plants and equipment are allowed in the construction sites. The said servicing and repair activities should be carried at authorised workshops equipped with pollution control facilities.
- (d) Fuel storage tanks, if provided, shall be equipped with containment facilities as stipulated in the Singapore Standard on Code of Practice for Pollution Control (i.e. SS593:2013).

- (e) Construction site shall also comply with the earth control measures requirements as imposed by PUB.

Reviewed in Jun 2018



To all concerned parties

We act for PowerGas Ltd.

NOTES FOR WORKING NEAR POWERGAS GAS TRANSMISSION PIPELINE

1. Introduction

- 1.1 The Gas Transmission Pipeline (GTP) is designed to carry gas at high pressures. It is buried underground with granite dust and earth backfill cover as required under LTA's regulations. Warning markers are planted near the gas pipeline or pasted on nearby lamppost to indicate its existence and warn third parties working in the area.
- 1.2 SPPG patrols the pipeline regularly to monitor works in the vicinity by third parties. Such works if done without knowing the existence and/or exact location of the pipeline can potentially damage the gas pipeline and/or its coating. SPPG pays special attention to drilling, piling, blasting or any high impact works such as, excavation, tunneling works and construction of structures near or over the gas pipeline and gas plant.
- 1.3 Any party who intend to carry out any construction activities in the vicinity of the GTP shall notify and cooperate with SPPG to implement measures to protect the gas pipeline and gas plant from all possible damages.

2. Statutory Requirement

- 2.1 Section 32 Carrying out earthworks within vicinity of gas plant or gas pipe of the Gas Act (Chapter 116A) requires anyone who wants to carry out earthworks in the vicinity of the gas plant or gas pipe to;
 - (a) give the Gas Transporter (PowerGas) not less than 7 days' notice in writing of the date on which it is proposed to commence the earthworks;
 - (b) obtain from the Gas Transporter the necessary information on the location of the gas plant or gas pipe; and
 - (c) consult the Gas Transporter on the steps to be taken to prevent the gas plant or gas pipe from being damaged while the earthworks are being carried out.
- 2.2 Section 32 also requires the person carrying out the earthwork to comply with the requirements of the transporter, ensure precautionary measures are taken to prevent damage to the gas pipe or gas plant and provide access to the transporter for inspection or taking necessary protective measures.
- 2.3 Any person that contravenes this Section 32 is guilty of an offence and shall be liable to a fine not exceeding \$100,000 or to imprisonment for a term not exceeding 5 years or both.

3. Requirements on Third Parties working near the Gas Transmission Pipeline

3.1 Pre-work Consultation with SPPG

- a) The works owner and contractor shall inform SPPG in advance of their intention to work in the vicinity of the GTP and submit NCE accordingly. Such works include excavation, piling, earthwork leveling, bore logging, trial holes, blasting, tunneling or any earth works. The proposed work with construction drawings and method of statements shall be given to SPPG to evaluate the impact of the works on the pipeline. This enables SPPG to advise on appropriate precautionary measures to be taken.
- b) The works owner and contractor shall obtain the as-built drawings of GTP from SPPG. They are required to incorporate the pipeline alignment co-ordinates into their construction drawings. Please note that the information in the as-built drawings should be treated as confidential and should not be shared.
- c) No works in the vicinity of GTP shall be carried out without prior consultation with SPPG. An impact assessment for the works and implementation of precautionary measures to prevent damage to the gas pipe or gas plant shall be submitted to SPPG
- d) SPPG shall be kept informed of any changes to the proposed works.
- e) No permanent structures shall be designed and constructed above the GTP. However, surface road over the pipeline without reducing the pipeline cover may be acceptable, subject to SPPG's concurrence.

3.2 Precautionary Measures during Works

- a) The works owner and contractor shall take all necessary precautions to prevent any damages to the GTP during the construction stage. They shall inform SPPG before carrying out any excavation works near the gas pipeline and **report all damages** to the gas pipeline and its coating to SPPG. Repair shall be done immediately to prevent corrosion aggravation to the gas pipeline at the damage location and thus becoming a potential hazard.
- b) All propose works shall be accompanied with Risk Assessment, Impact Assessment and Safe Works Methodology endorsed by QP.
- c) If any **earthwork is within 5m of the pipeline (or more when required)**, a registered surveyor shall be engaged to peg the pipeline alignment (generally every 2m) and interpret the pipeline depth from the pipeline drawings. Pegging and marking shall be clear and prominent and remain as such for the duration of works. Trial holes to prove the location of the GTP shall be carried out and all trial holes shall only be done in the presence of SPPG officer. A SPPG RES(Registered Earthwork Supervisor) shall supervise the earthwork and monitor the pipeline depth closely based on the surveyor's interpretation.
- d) Only manual excavation is allowed within 1m of the gas pipeline and only hand excavation is allowed within 0.5m of the gas pipeline.
- e) Under no circumstance shall the GTP be exposed without written consent of SPPG. GTP shall only be exposed in the presence of SPPG Officer. If a GTP is exposed, the owner/contractor shall take the necessary measures to protect the pipe from any physical impact that may cause damage to the pipe and/or its coatings to the satisfaction of SPPG.

- f) Do not shift or remove warning markers indicating the existence of the GTP at site without SPPG's approval. The contractor shall protect them from being damaged or tampered. In the event the warning markers are damaged, they shall be reported to SPPG and replaced immediately. Where necessary, additional temporary warning markers shall be installed to warn others of the presence of gas pipeline.
- g) For **blasting works**, piling or any works that cause ground vibration, the peak particle velocity (PPV) of ground shock generated by the blast shall be limited to 15mm/s measured at the pipeline and 5mm/s measured at gas plant. The PPV shall be monitored in real time. SPPG shall be notified once the PPV reaches 10mm/s for the gas pipeline or 3mm/s for the gas plant.
- h) For **tunneling, shaft excavation** and piling works, ground consolidation could occur due to ground water losses resulting in surface settlement. This settlement can potentially induce excessive stress on the pipeline. The contractor shall engage a Qualified Personnel conduct a risk assessment to assess the impact of tunneling on the surrounding area and to the GTP. To monitor the surface settlement, surface monitoring points shall be installed along the pipeline alignment at every 10m intervals for at least 100m pipe length from the tunnel or shaft. The settlement shall be regularly monitored while excavation or tunneling works are being carried out. A differential settlement attained less than 1:1000 will require all parties involved to assess the ground consolidation and evaluate the need to implement measure to arrest the consolidation. Contractors are advised to stop works when the differential settlement attained less than 1:714 and a thorough stress analysis of the pipeline shall be done by competent persons recognised by SPPG. Depending on the findings of the analysis, measures shall be taken to relieve the pipeline from stress induced. Final reinstatement of the differential settlement to relieve the stress on GTP shall be included (i.e. to settlement of 1:1000 or better). Detailed assessments are also required for any pipelines that have gross structural discontinuities (i.e: bends, tees, valves, etc)
- i) For **crossing and parallel laying** of services to GTP, Table 1 shows the required separation distance between the GTP and other services or structures. It should be noted that other authorities may have stricter or additional requirements on minimum separation distance between proposed building / structure and the pipeline than what is stated here. Services crossing the pipeline shall not be at the previous boring pit locations of the pipeline, the locations are to be advised by SPPG. The services crossing over the GTP shall not be an obstruction for SPPG to access the GTP. (Generally, the services should not be wider than 1m and self-suspended without a support).
- j) For movement of heavy haulage over the gas pipeline, the transporter shall submit the proposed route to SPPG. The load per axial shall be limited to 10tonne and sufficient load distribution shall be placed for crossing over the pipeline and if the pipeline is not buried under a proper road.
- k) For any new development surrounding the GTP, the developer shall inform the property owner on the location of the pipeline within their premises and draw up measures to prevent any possible damage to it. Pipeline within a fenced compound shall be accessible to SPPG for patrolling and any maintenance works as and when required.
- l) For laying of new pipeline or construction of new structure with cathodic protection, a proper study and survey needs to be implemented by the contractor to ensure no cathodic protection system are compromise or interfered with.
- m) For major works that span over a long period of time, the owner and contractor shall hold monthly meetings to update SPPG on the progress and any changes to their works.

3.3 Repair of Damage Pipe/Coating

In the event the pipe and/or its coating are damaged by the third party works or found damaged, **immediate report** shall be made to SPPG. SPPG will undertake the necessary repair works. All costs of such repairs shall be borne by the third party responsible for the damage.

3.4 Emergency Works

When emergency works have to be done near the pipeline in the interest of public or private safety, the owner and contractor shall **call SPPG** at the 24-hour hotline at **1800 752 1800 or 69167400**. SPPG officers will respond to site to advise on the approximate location of the gas pipeline. The contractor shall ensure safe works are executed for emergency works near the gas pipeline or gas plant. The Principal shall submit a written notice to ESP within 24 hours after the work has commenced.

4. Enquiries

The above requirements are only stated in general. The concerned party shall consult SPPG on all works near the GTP. SPPG reserves the right to alter any stated requirements or impose additional requirements that are necessary depending on site conditions and type of work. Refer all enquiries and correspondences on works near the GTP to:

Postal address

Transmission Pipelines Operations and Maintenance (TPOM) Section
SP PowerGrid Ltd (Gas Operation)
National Gas Control Centre
24A Senoko Ave
Singapore 758314

Email: gasenquiry@spgroup.com.sg

Telephone numbers

Transmission Pipelines Operations and Maintenance (TPOM) Section :
6916 6136 / 6916 6112

24-hour System Control Centre: **6916 7400**

24-hour Customer Service Centre: **1800 752 1800**

HEAD OF SECTION
TRANSMISSION PIPELINES OPERATIONS AND MAINTENANCE (TPOM)
GAS OPERATIONS
SP POWERGRID LTD
As agent for and on behalf of PowerGas Ltd

(This is a computer-generated document. No signature is required.)

Table 1: Minimum Separation Distance Between GTP And Other Services / Structures

S/N	Service / Structure	Minimum separation distance / Requirements
1.	Bore / sheet piling	5.0m. May require real time monitoring of soil movement and settlement and additional Risk/Impact Assessment.
2.	200x200 Concrete Piles	3.0m
3.	Tunneling	Clearance distance 2.0m or more. Depending on size and depth, it may require real time monitoring of soil movement and settlement and additional Risk/Impact Assessment.
4.	Directional Drilling	2.0m plus radius of final tunnel size
5.	Formed Drain / Earth Drain	1.2m / 1.5m
6.	Minor Drain	0.5m
7.	Water/Sewer Pipe: less than 700mm dia.	1.0m
8.	Water/Sewer Pipe: 700mm dia. or larger	2.5m or more depending on size of pipe and construction method.
9.	Electric Cables: less than 22 KV	0.5m
10.	Electric Cables: 22KV and above	1.2m
11.	Telecom cables	0.5m
12.	Low pressure gas pipe	0.5m
13.	Shrubs	1.2m
14.	Trees	2.0m
15.	Soil Investigation	10.0m (If lesser, with positive identification of GTP)
16.	Posts / foundations for light, signs etc	1.5m
17.	Road Pavement	1.5m
18.	Off-Road Crossing for heavy vehicles	1.5m or more with 25mm steel plating on surface.
19.	Earthing Rods	5.0m



To all concerned parties

We act for PowerGas Ltd.

Requirements for Distribution Gas Pipe Diversion Works

Planning Phase

1. Prior to any excavation works, the project owner / contractor shall request for gas services returns and acquire the gas plans.
2. Where any gas pipe is affected, the project owner / contractor shall liaise with Gas Distribution Planning section for diversion of pipes. As far as possible, no gas pipes shall be within the hoarding area of the work site.
3. The project owner / contractor shall provide a feasible corridor free from other underground services and away from semi-rigid / rigid pavements to facilitate the diversion work. If there are other underground services along the proposed corridor, the project owner / contractor shall consult and obtain the necessary clearances from the relevant agencies for the new gas pipe to be laid.
4. Depending on the extent and complexity of the diversion, a long lead time may be required. Hence, the project owner is advised to consult the planning team early.

Construction Phase

1. The project owner / contractor shall coordinate all diversion activities with Gas Distribution Projects section.
2. The consultant / contractor shall arrange a site walk with the SPPG Officer-in-Charge prior to the commencement of pipe laying works.
3. The project owner / contractor shall peg the confirmed pipe corridor.
4. A minimum clearance of 300mm shall be maintained between our gas pipes and all other services or structure.
5. Wherever possible, valves shall be installed to enable quick isolation of pipeline within the work site (e.g., crossing of bored tunnels, cut-and-cover tunnels). These isolation valves should not be located inside the work site.
6. Where the cut-and-cover tunnel runs parallel to the gas pipes, there shall be a minimum clearance of 5 metres from the diaphragm wall.
7. Once laying of gas pipeline is completed, pipe cleaning and pressure test will be conducted.
8. For works within third party worksites, a site inspection with the SPPG Officer-in-Charge shall be conducted prior to commissioning of the gas pipe to check that the site is in order.

Gas Pipeline Safety and Integrity

1. All vent shafts to the tunnels shall be at least 20 metres away from the gas pipes.
2. All piles shall be at least 5 metres away from the gas pipes, which shall be determined by trial holes.

3. All crossings over cut-and-cover tunnels shall be replaced temporarily with steel pipes for suspension and subsequently replaced with polyethylene pipes upon the completion of the construction work. The steel pipe supports shall be endorsed by a Professional Engineer (Civil) and submitted to SPPG Gas Operations. The support system shall allow access to the pipe for inspection and for fire-fighting purposes in the event of an emergency.
4. No air intake / outlet shall be located near the gas pipes.
5. Valve chambers which are still located within the work site due to site constraints, shall be raised 0.5 metres above ground level and kept visible and accessible at all times for emergency.
6. The project owner / contractor shall be aware of all gas pipes within the work site and shall ensure that all parties working within the site are also aware of the locations of the gas pipes. Where possible, prominent markers indicating the pipe route shall be displayed.
7. The project owner / contractor shall be responsible to maintain the integrity of the gas pipes, protection slabs, warning markers and gas chambers within the work site, and to comply with the following:
 - a) No permanent structure is to be constructed over any gas pipe,
 - b) No Electronic Parking System (EPS) is to be constructed over any gas pipe,
 - c) No heavy machinery / equipment is allowed to be placed over any gas pipe,
 - d) All gas chambers or standpipes must be barricaded prominently with "Danger" sign,
 - e) Access shall be provided for gas inspection and maintenance to be conducted regularly along the pipe route within the work site.
8. Wherever possible, no hot work is allowed in the vicinity of the gas pipes. If hot work is unavoidable, the project owner / contractor shall take all necessary measures, including but not limited to the following:
 - a) The site shall be certified gas-free by a qualified Safety Officer,
 - b) Gas-free checks shall be conducted regularly before and throughout the work,
 - c) All necessary precautions to prevent damage to the gas pipes shall be taken,
 - d) All possible occurrence of fire hazards shall be eliminated and, if necessary, consult SPPG on other precautionary actions to be taken.
9. The project owner / contractor shall notify SPPG Gas Operations of any works directly or indirectly affecting the gas pipes.
10. The project owner / contractor shall monitor possible ground movements / soil subsidence in the vicinity of their work sites and inform SPPG Gas Operations immediately if any such movements / subsidence is observed / detected and where gas pipes are present.
11. In the event that any gas leak is detected, all works shall cease immediately and SPPG Gas Operations 24 hrs Gas Service Operation Centre shall be contacted at Tel: 1800-752-1800 for assistance.

Acknowledged by:

Project Name: _____

Signature & Stamp of Principal / Consultant

Name : _____

Designation : _____

Signature & Stamp of Main Contractor

Name : _____

Designation : _____