

SALE OF AGRICULTURAL LAND FOR FARM USE

(ST28I)

CONDITIONS AND REQUIREMENTS OF RELEVANT AUTHORITIES / PUBLIC UTILITY LICENSEES (FOR SUCCESSFUL TENDERER'S INFORMATION ONLY)

CONTENTS		PAGE
1	DEFINITIONS / INTERPRETATION	2
2	GENERAL CONDITIONS AND REQUIREMENTS	2
3	NATIONAL ENVIRONMENT AGENCY (“NEA”)	4
4	POWERGAS	5
5	SP POWERGRID (“SPPG”)	6
6	MINISTRY OF DEFENCE (“MINDEF”)	8
7	SINGAPORE CIVIL DEFENCE FORCE (“SCDF”)	10
8	LAND TRANSPORT AUTHORITY (“LTA”)	10
9	NATIONAL PARKS BOARD (“NParks”)	11
10	PUBLIC UTILITIES BOARD (“PUB”)	14
	A. DRAINAGE	14
	B. USED WATER	19
	C. WATER SUPPLY	25
11	COMPLIANCE WITH TECHNICAL CONDITIONS OF RELEVANT AUTHORITIES	26
ANNEX A – NOTES FOR WORKING NEAR POWERGAS TRANSMISSION PIPELINE		27
ANNEX B – REQUIREMENTS FOR DISTRIBUTION GAS PIPE DIVERSION WORKS		28
ANNEX C – FIRE SAFETY ACT 1993 AND REGULATIONS		29
ANNEX D – WATER CONSERVATION GUIDELINES		30
ANNEX E – WATER SUPPLY NETWORK PLAN		31

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1.0 DEFINITIONS / INTERPRETATION

- 1.1 Unless the context requires otherwise, words and expressions defined in the Letter of Offer, this Agreement and the Leases shall have the same meaning when referred to herein.
- 1.2 In the event there is any conflict or inconsistency between the provisions of this Schedule and the rest of this Agreement, the latter shall to the extent of such conflict or inconsistency prevail.

2.0 GENERAL CONDITIONS AND REQUIREMENTS

- 2.1 The Successful Tenderer for ST28I is required to ascertain the exact and detailed conditions and requirements of all relevant Authorities / public utility licensees in respect of the proposed development thereon and shall at its own cost and expense observe and comply with the same.
- 2.2 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 Successful Tenderer only. Whilst every care and attention has been taken in the compilation and preparation hereof, the Lessor does not represent or warrant that the contents herein represent all the conditions and requirements of the relevant Authorities / public utility licensees in respect of the proposed development on ST28I or that they are free from errors or omissions whatsoever. The contents herein are subject to changes from time to time by the relevant Authorities / public utility licensees concerned. For the avoidance of any doubt, it is the Successful Tenderer's sole responsibility to obtain and ensure compliance with the latest conditions and requirements of the relevant Authorities / public utilities licensees.
- 2.3 A summary of the initial services requirements of the relevant Authorities / 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.
- 2.4 The Successful Tenderer shall ensure that the following requirements are complied with: -
- A. to consult and liaise directly with the relevant Authorities / public utility licensees regarding the actual locations of all service mains within ST28I and on the

requirements and conditions for services diversion 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.

- B. to engage its own licensed Cable Detection Worker (“**CDW**”) / licensed Telecommunication Cable Detection Worker (“**TCDW**”) 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.
 - C. 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 proposed 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.
 - D. to ensure that the relevant Authorities / public utility licensees are allowed free and unconditional access at all times to services that are required to remain within ST28I for the purpose of installation, maintenance, repair and improvement works and all other work and activities incidental thereto.
 - E. to make its own arrangements with the relevant Authorities / public utility licensees and pay for the costs of any diversion and/ or "capping off" of existing services, provision of service mains and connection fees if any, in connection with the proposed development.
 - F. to provide all the internal distribution for water, electricity, drainage and sanitary discharge for the proposed development.
 - G. to liaise with all the relevant Authorities / public utility licensees on upgrading the road reserves abutting ST28I to ensure that the necessary roadside drains, sidetable, kerb, etc are carried out in accordance with the latest Road Reserve requirements.
- 2.5 The Successful Tenderer shall note that there may be sub-structures e.g. footings, piles, tree roots, etc. and other obstructions in the ground. The Successful Tenderer shall at its own cost and expense carry out its own site verification of these sub-structures and other obstructions, and ascertain its effect on the proposed development.
- 2.6 In general, no structure shall be sited close to or over existing/ proposed services. The Successful Tenderer shall comply with all the necessary requirements as stipulated by the relevant Authorities / public utility licensees.
- 2.7 The Successful Tenderer shall seek all relevant Authorities' approval on the layout plan.

3.0 NATIONAL ENVIRONMENT AGENCY (“NEA”)

3.1 General

- 3.1.1. Sewage, used water and trade effluent from the proposed developments shall be discharged into the public sewer in accordance to the conditions and requirements imposed by PUB. Sewage and wastewater (i.e. trade effluent from farming activities) shall not be discharged into any storm water drain or onto any land. The Successful Tenderer / qualified person should check with PUB on the point for sewer connection and the allowable discharge rate. Holding tanks shall not be used at locations served by sewer network.
- 3.1.2. Refuse and other solid wastes (e.g. dead fish, discarded vegetable, etc.) generated from the proposed developments 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 systems (e.g. bin centre) are in compliance with the public health requirements stated in the Code of Practice on Environmental Health. Refuse or solid wastes are not allowed to be disposed by throwing them into any drain, burying them on-site or using open burning method.
- 3.1.3. If pesticides will be used in the proposed farms, the farm owner/operator will have to ensure that only pesticides that are registered with the Singapore Food Agency (SFA) shall be used. Also, approval from NEA is required if any pesticides that are listed as hazardous substances under the Environmental Protection and Management Act (EPMA), will be used. Before application, pesticides shall be stored within a building or covered shed equipped with leakage or spillage containment facilities. Their dosage will also have to be controlled so that it will not cause any nuisance problem to people or contamination to the surface run-off during raining.
- 3.1.4. Off-road diesel engines used in the proposed farms shall comply with the provisions and requirements as stated in the Environmental Protection and Management (Off-Road Diesel Engine Emissions) Regulations. Off-road diesel engines are any equipment or machinery with diesel engines as the main or auxiliary prime mover and not registered with the Land Transport Authority (LTA) for use on public roads. Examples include construction equipment such as cranes, excavators, forklifts, and power generators.
- 3.1.5. If there will be foul smell generated from the proposed farming activities, odour abatement facilities shall be provided to treat the foul smell from the farm.
- 3.1.6. Technical details of the proposed pollution control equipment/facilities, (e.g. odour abatement facility) shall be submitted to NEA for clearance before installation. The proposed pollution control equipment/facilities should be duly installed and ready for use before the proposed farm commences operations.
- 3.1.7. All the applicable requirements and provisions of the Singapore Standard on the 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 shall be complied with.

3.2 Particular Requirements

For ST28I

- 3.2.1 ST28I 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. Activity that could pose serious contamination risk to our water resources shall not be carried out. In addition, the owner/operator shall adopt and implement the Best Management Practices (BMPs) at the proposed farm to prevent pollution to the environment or nuisance impacts to people in the area.
- 3.2.2 ST28I is located in very close proximity to the Tengah Airbase and hence is subject to very high ambient noise level attributed to the aircraft operations. Due to the relocation of Paya Lebar Air Base operations to Tengah Air Base in the near future, the subject site would be subjected to even higher noise level based on today's context. If workers' dormitories are included in the proposal, it is the operators /owner's responsibility to ensure that the workers staying in the dormitory would be sufficiently protected from loud aircraft noises. Hence, the operator/owner is required to incorporate Noise Mitigation Measures (NMMs) (such as concrete walls and roofs, noise fins (minimally 600mm to be effective) and laminated glass casement windows (i.e. minimally 1/2" glass, 0.03" PVB, 1/4" glass)/double-glazed casement windows (i.e. minimally monolithic 1/4" glass, 1/2" airspace, laminated 3/16" glass, 0.03" PVB, 3/16" glass)) into the design of the workers' dormitory. The Company is required to engage an Acoustic Consultant (AC) to assess, evaluate, verify, and certify the NMMs. The Successful Tenderer is also required to appoint a Qualified Person (QP) to certify that the NMMs are implemented.

4.0 POWERGAS

4.1 General

- 4.1.1 The Successful Tenderer shall liaise with a gas retailer on the requirements for gas supply to the Land Parcel. 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.
- 4.1.2 The Successful Tenderer shall at his own cost and expense, carry out trial trench / holes to determine the exact alignment and levels of any existing gas main within the Land Parcel and in the vicinity of the Land Parcel 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.
- 4.1.3 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.

- 4.1.4 The Successful Tenderer will need to purchase the gas plan from PowerGrid's Mapping & Earthworks Administration section at tel. no. 69165022 or email mea@spgroup.com.sg. If the gas pipelines are affected by the Successful Tenderer's proposal, please submit a request together with the diversion corridor and length to <https://ebiz.spgroup.com.sg/index.html> for consultation on gas pipeline diversion. Alternatively, the Successful Tenderer may email to ebiz@spgroup.com.sg for further enquiries.
- 4.1.5 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.
- 4.1.6 For further enquiries pertaining to the existing gas transmission pipelines, please email gastrans@spgroup.com.sg. A copy of "Notes for Working near PowerGas Transmission Pipeline" is appended in **Annex A** for the Successful Tenderer's information.
- 4.1.7 A copy of Distribution "Requirements for Distribution Gas Pipe Diversion Works" is enclosed in **Annex B** for the Successful Tenderer's information.
- 4.1.8 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.
- 4.1.9 The latest gas plan(s) can be purchased on request from:
Mapping & Earthworks Administration Section
2 Kallang Sector
Singapore 349277
Tel: 69165022
Email: mea@spgroup.com.sg

5.0 SP POWERGRID ("SPPG")

5.1 General

- 5.1.1 The Successful Tenderer shall liaise with the Transmission Licensee authorised under the Electricity Act 2001 for the electricity supply and any other electrical provisions required for the purpose of and in connection with the proposed development on ST28I.
- 5.1.2 The Successful Tenderer shall purchase cable plans from SP PowerGrid Ltd ("SPPG") and engage a Licensed Cable Detection Worker to carry out detection for

any underground electricity cables within ST28I. For more information on the protection and diversion to the underground electricity cables, the Successful Tenderer can refer to SP e-Business Portal located at <https://ebiz.spgroup.com.sg/index.html>. If the existing underground electricity cables are affected by the new development, the cost of diverting the electricity cables shall be borne by the Successful Tenderer.

- 5.1.3 The Successful Tenderer shall provide electrical substation(s) within ST28I that shall meet the technical requirements specified by the Transmission Licensee authorised under the prevailing Electricity Act 2001 for electrical supplies to the development.

5.2 Particular Requirements

ST28I

- 5.2.1 The existing maximum electrical load available for ST28I without the need for a new substation is 280kVA.
- 5.2.2 Based on the information provided by SPPG, there are existing underground electricity cables in the vicinity of ST28I. If the existing underground electricity cables are affected by the new development, the cost of diverting the electricity cables shall be borne by the Successful Tenderer.
- 5.2.3 The Successful Tenderer shall engage the services of licensed cable detection workers to carry out the cable detection work prior to the commencement of earthworks. All necessary precautionary measures must be taken to prevent damaging SPPG's cables at the work site.
- 5.2.4 The Successful Tenderer can contact Earthworks Surveillance and Patrolling Section's Mr Benny Quek, Principal Engineer at Tel no. 6916 5150 regarding cable damage preventive measures. The Successful Tenderer is required to submit notices to SPPG at least 7 days prior to earthworks (including trial trenches) in the vicinity of high voltage electricity cables under the provisions of the Electricity Act 2001.
- 5.2.5 The Successful Tenderer is advised to acquire a set of drawings for the electricity cables around the proposed work area. For further details on cable plan requests, please contact Mapping & Earthworks Administration Section at Tel No. 6916 5022.
- 5.2.6 For proposed earthworks which are likely to affect the cables and need cable diversion/protection/suspension etc, after the cable detection work is done, the Successful Tenderer can request for diversion via the SP e-Business Portal located at www.spgroup.com.sg, under the heading "Electricity & Gas" or contact the following officers:
- A. For 22 kV and below cables, please contact Mr Lim Dingcai, Principal Engineer of Distribution Network (VI) Section at Tel No. 6916 5667 or email: dingcai@spgroup.com.sg

- B. For 66 kV cables, please contact Mr Shiva Raj, Principal Engineer of Regional Network West 66kV Section at Tel No. 69165557 or email: shivaraj@spgroup.com.sg
- C. For 230kV and above cables, please contact Mr Mohamed Shariff Bin Mydin A S, Senior Technical Officer of Extra High Voltage Network Section at Tel No. 69165483 or email: mohamedshariffmydin@spgroup.com.
- D. For cable tunnels, please contact Mr Kua Siang Meng, Principal Engineer (Facilities Management Section) at Tel No. 6916 6008 or email kuasiangmeng@spgroup.com.sg

5.2.7 The Successful Tenderer shall notify SP PowerGrid 6 months before the commencement of earthworks affecting distribution cables and 24 months if the work involves transmission cables (66 kV and above). The cost of cable diversion / protection / suspension incurred by SPPG shall be borne by the requesting party. The Successful Tenderer shall not commence the proposed earthworks until the affected cables are diverted/protected/suspended.

5.2.8 For information on substation and connection requirement, etc. for your proposal, the Successful Tenderer can consult Mr Ooi Wenyao, Principal Engineer of Distribution Planning Section at Tel No. 6916 8551 or email: wenyao@spgroup.com.sg. For matters on substations to make way for redevelopment works, please contact Mr Tan Juay Hwee, Senior Technical Officer of Distribution Planning Section at Tel No. 6916 8385 or email: tanjuayhwee@spgroup.com.sg.

5.2.9 For any further clarification on cable damage prevention measures, the Successful Tenderer can contact Mr Benny Quek, Principal Engineer of Earthworks Surveillance & Patrolling Section at Tel no. 69165150 or email: quekgh@spgroup.com.

6.0 MINISTRY OF DEFENCE (“MINDEF”)

6.1 General

6.1.1 The Successful Tenderer shall consult Defence Science and Technology Agency (DSTA) through URA – Development Control Group when the detailed development plans are available.

6.1.2 All capital and operating costs or expenses incurred to meet all the stipulated conditions and requirements shall be borne by the Successful Tenderer.

6.2 Particular Requirements

For ST28I

6.2.1 The Successful Tenderer shall note that as ST28I is located in proximity to Tengah Air Base, aircraft noise and vibrations should be expected. As such, these effects should be taken into account in the proposed 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 proposal must not

impose any constraint on MINDEF or curtail its existing and future developments, operations and activities in any way.

- 6.2.2 The Successful Tenderer shall ensure that all developments, structures and fixtures on ST28I shall not exceed the maximum height of 60m Singapore Height Datum (SHD). Such developments, structures and fixtures include those on the roof tops, whether permanent, temporary, transient or stationary (including but not limited to the building superstructure, TV antennae, water tanks, lift motor rooms, 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.) which shall all be subject to the same height limit(s). Republic of Singapore Air Force's ("RSAF") clearance shall be sought for the use of construction equipment and temporary structures above 60m SHD (Email: height_control@defence.gov.sg). .
- 6.2.3 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.
- 6.2.4 ST28I is located within Glazing Control Zone "A". All buildings/structures (in their entirety) within this Control Zone are subject to glazing control requirements if their height is more than 12m Above Ground Level. A copy of the glazing control guidelines can be obtained from BCA upon obtaining Planning Permission from the relevant authorities.
- 6.2.5 There is a need for visual controls at ST28I to shield the facilities at Tengah Air Base from external view. This can only be determined when design details such as number of storeys of the proposed development, location of openings (e.g. windows) etc. are made known to DSTA. The Successful Tenderer shall comply with the details of the visual controls as follows:
- I. The views from windows, corridors, staircases, or any openings, or any surveillance cameras, devices or equipment (e.g. CCTVs) on the land parcel exceeding the height of 40m to 50m AMSL (indicative) must be directed away from MINDEF's premises.
 - II. If (I) becomes impracticable to implement, the Successful Tenderer can propose visual screening measures in the form of permanent fixtures which are impossible or difficult to remove. They can include but are not limited to the following:

- a. Window openings are to be recessed or have fixed frosted glass panels;
- b. Corridors, staircases, fixtures and other openings are to be provided with louvres; and
- c. Parapet wall on the rooftop should have a height of 2m for personnel and 3m for vehicles.

The Successful Tenderer is advised to liaise with DSTA early on the requirements for these visual controls and submit the proposal to DSTA for MINDEF's comments and clearance (at least 1 month in advance) at the detailed design stage and arrange for inspection(s) of the mock up screening measures on site before implementation. Such inspection may include the use of alternative means such as virtual meetings or multi-media to facilitate MINDEF's assessment.

7.0 SINGAPORE CIVIL DEFENCE FORCE ("SCDF")

7.1 General

- 7.1.1 For Fire Safety requirements, the Successful Tenderer is required to comply with the Fire Safety Act 1993 and Regulations (**Annex C**). If the Successful Tenderer has any clarifications on Fire Safety requirements, the Successful Tenderer should consult the Fire Safety Department ("**FSD**") located at SCDF Headquarters.
- 7.1.2 The Successful Tenderer shall ensure fulfilment of the necessary SCDF requirements.

8.0 LAND TRANSPORT AUTHORITY ("LTA")

8.1 General

- 8.1.1 The Successful Tenderer shall prepare/ design, submit, supervise and construct all proposed street works, as well as proposed engineering/ construction works within the road reserve in accordance with the Street Works (Private Street Works) Regulations and the following prevailing standards and code of practice:
 - A. Street Work Proposals relating to Developmental Works
 - B. LTA Standard Details of Road Elements
 - C. Materials Workmanship Specifications for Civil and Structural Works
 - D. Code of Practice for Road Opening Works
 - E. Code of Practice for Traffic Control at Work Zone and,
 - F. Architectural Design Criteria and Civil Design Criteria
- 8.1.2 Successful Tenderer is required to submit Development Control application via CORENET to obtain LTA's clearance. LTA's Plan Compliance Division (PCD) will provide necessary requirements upon receipt of the application.
- 8.1.3 The Successful Tenderer shall abide to the following guidelines

Access point

- A. Each development shall be served by one access point only.
- B. Access point shall be taken from less major road if there are more than 2 roads abutting the site.
- C. Access point is to be located at a safe distant, at least 50m from road junction and 30m from road bends, pedestrian crossing, bus-stops, existing adjacent/opposite access points. The distant should be measured tangent-to-tangent point at the access turning road kerb.
- D. Access width and turning kerb radius should be designed according to Code of Practice (Street Work Proposal Relating to Development Works).
- E. A minimum 2 car queuing lengths shall be provided before the drop barrier, if any within the development boundary to prevent queue build-up along the public road.
- F. Access shall have sufficient line-of-sight as in accordance with LTA guidelines.
- G. Services access to bin centre and electric sub-station shall be taken from within the site. Separate access directly from the public street is not allowed, especially along major roads. The bin centre shall be designed for refuse trucks to turn around within the development and not to reverse into the site from the public roads or vice versa.
- H. Pick-up drop-off (PUDO) area within the site shall be provided.

8.2 Particular Requirements

ST28I

- 8.2.1 The access location for ST28I is to be sited along Sungei Tengah Lane as shown indicatively in the Control Plan set out in **Part B of Schedule 6** to this Agreement.
- 8.2.2 Prior approval from LTA is required for any deviation from the designated access points as indicated in the Control Plans set out in **Part B of Schedule 6** to this Agreement.
- 8.2.3 The proposed development shall be served by only one access point. Prior approval from LTA is required for any deviation.
- 8.2.4 Submission to LTA (Vehicle Parking) is exempted for development of land for the purpose of farming. However, the Successful Tenderer is required to have a plan for managing parking and preventing overspill onto the public roads, especially during the peak periods for ancillary uses such as F&B or a visitor centre.

9.0 NATIONAL PARKS BOARD (“NParks”)

9.1 General

- 9.1.1 The Successful Tenderer whom 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 proposed Site 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 proposed Site.

B. The Successful Tenderer is required to present the following at the consultation:

- I. A survey plan (survey done less than 2 years at the point of application and endorsed by a qualified surveyor) of the site 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 proposed Site; and
- II. All other relevant additional information such as plans on construction hoardings.

9.1.2 The Successful Tenderer shall note and adhere to the following requirements in respect of the green verges/planting areas surrounding the sites. Further details of these requirements can be found in NParks' "Guidelines on Greenery Provision and Tree Conservation for Developments". It is available at <https://www.nparks.gov.sg/publications-resources/guidelines-greenery-provision-tree-conservation-developments>. In particular, Successful Tenderer shall ensure that:

A. The width of the green verges adjacent to the sites and the width of the planting areas within the sites 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.

B. The width of the planting areas within the Land Parcel shall be in accordance with NParks' standard greenery guidelines, unless otherwise reflected in the Control Plan

C. The green verges which are located adjacent to the sites are not affected by the proposed works, including without limitation:

- I. 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 verges;
- II. 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;

- III. 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 site and not within the green verges; and
 - IV. Ensuring that there is no change of soil level to the green verges without prior approval from the Commissioner
- 9.1.3 The Successful Tenderer must also ensure that the development on the proposed site complies with the requirements for planting areas within the site, 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.
- 9.1.4 If there is any indication that the works at the proposed Site will affect the green verge(s) / planting areas in any way whatsoever, the Successful Tenderer must seek the Commissioner's approval as set out in paragraph 9.1.1 of this Conditions and Requirements of Relevant Authorities / Public Utilities Licensees, as well as the approval of the other applicable authorities under the relevant legislation, for the conduct of the works that will affect the green verge(s) / planting areas.

9.2 Particular Requirement

ST28I

- 9.2.1 The parties (Developer, QP and Main Contractor) related to the project will be receiving Directions issued by the Director-General/Wildlife Management ("Director-General") pursuant to section 10 of the Wildlife Act (Cap. 351), in relation to this Project. **The Successful Tenderer is to inform NParks when the Developer, QP and Main Contractor are on board.** Please be reminded that all requirements stated in the said directions shall be complied with.
- 9.2.2 The Successful Tenderer shall note that no works shall be allowed to commence prior to issuance of directions under section 10 of the Wildlife Act.
- 9.2.3 Please be informed that there are NParks' orchid and landscape nurseries in the area south of ST28. The Successful Tenderers is advised to adopt control measures, to manage any airborne pesticides taking into consideration the orchard and landscape nurseries in the vicinity.
- 9.2.4 There is a safeguarded 15m wide flat land setback from the top operating water level of the reservoir (101.68mRL) for NParks' future Park Connector (PC). There is also a safeguarded notional park (approximately 0.1ha). The Successful Tenderer must ensure that both the 15m PC and notional park remain unaffected by the proposed development.

10.0 PUBLIC UTILITIES BOARD ("PUB")

A. DRAINAGE

10.1 General

- 10.1.1 The planning, design, construction activities and procedures for plan submission shall fully comply 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 Public Utilities Board (PUB) website at <https://www.pub.gov.sg/Professionals/Resources/Code-of-Practices>.
- 10.1.2 The topography of the site shall not be changed without the approval of PUB.
- 10.1.3 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/copes 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.
- 10.1.4 The development schedule of the site shall be properly considered to avoid a situation where site and / or lands in the vicinity become "land locked" without proper drainage outlets.
- 10.1.5 Any Drainage Reserve within the Land Parcel shall be safeguarded. In addition, the Successful Tenderer shall also ensure that all other existing drains and watercourses within and in the vicinity of the Land Parcel are likewise safeguarded. All existing drains within the Land Parcel shall not be altered/ interfered with without prior approval of the PUB.
- 10.1.6 The Successful Tenderer shall reconstruct the existing drain (if any) affected by the development. Appropriate Drainage Reserves shall be set aside for drains in accordance with the prevailing Code of Practice on Surface Water Drainage. The Successful Tenderer shall consult relevant agencies including URA on the required Drainage Reserves and obtain land use approval for the DR. The new drains shall be constructed and functional prior to the development. The detailed drainage plan for the proposed drainage work shall be submitted for PUB approval before the commencement of works.
- 10.1.7 If the existing roadside drain is within the land lot to be alienated or amalgamated, the Successful Tenderer shall realign the existing roadside drain to within/about the road reserve and reconstruct the roadside drain into covered drain. The Successful Tenderer shall construct the proposed drain to the required size as determined by PUB. The detailed drainage plan shall be submitted to PUB(C&W) for approval prior to the commencement of work on site.

- 10.1.8 If the proposed roadside drain cannot be fully accommodated within the Road Reserve, the width of the additional Drainage Reserve measured from the Road Reserve Line shall include maintenance access with a width as stipulated and shown in Appendix 1 of the prevailing Code of Practice on Surface Water Drainage.
- 10.1.9 If the proposed roadside drain also serves connectivity purposes, e.g. with a footpath, the drain shall be fully accommodated within the Road Reserve and the footpath maintained by LTA.
- 10.1.10 Drains/ Drainage Reserves that are cutting across the Land Parcel may be diverted to optimise land use on condition that the proposed diversion is technically and physically feasible and acceptable to Catchment and Waterways Department of the PUB. The drains shall be built by the Successful Tenderer to the drain sizes as determined by PUB. Any proposal to alter/ divert the drains shall be submitted to the PUB for approval.
- 10.1.11 The Land Parcel may be affected by common drains and other smaller drains which serve the Land Parcel and areas outside the Land Parcel. The Successful Tenderer shall ensure where there is existing runoff from adjacent premises or roads into or through the development site, the runoff shall continue to be allowed to discharge through the development site. Any proposal to alter, disturb, fill, block, interfere or divert these drains shall be submitted to the PUB for approval. Should the Successful Tenderer intend to make use of these common drains within the Land Parcel for further runoff from its Land Parcel such that the drain width needs to be increased, then a Drainage Reserve shall be imposed accordingly and this Drainage Reserve shall be required to be vested to the State unless otherwise advised by the PUB. The Successful Tenderer shall also be responsible for the maintenance (structural and cleansing) of smaller drains (without drainage reserve) that are flowing through the Land Parcel.
- 10.1.12 The existing drainage system within and in the vicinity of ST28I shall be upgraded/ improved to cater for increased runoff from the proposed development. In addition, new drains, depending on the type and nature of the proposed development, may be built within ST28I. Appropriate drainage reserves shall be set aside for drains in accordance with the prevailing Code of Practice on Surface Water Drainage.
- 10.1.13 The Successful Tenderer must incorporate safeguards in its design of the proposed development and also take all necessary precautions to ensure that the works / construction activities at ST28I will not cause any damage to, affect the structural integrity of, or cause any geotechnical distress or impact on the existing drains / culverts / canals. 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 service provider/ contractor'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).

- 10.1.14 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.
- 10.1.15 The Successful Tenderer shall carry out soil instrumentation for monitoring the soil/geo-technical/structural movements or changes at and around the work-site 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 and consultant/contractor shall be submitted to PUB before commencement of works.
- 10.1.16 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.
- 10.1.17 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. 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, postcondition survey and topography survey of the affected drains shall be submitted and PUB may request for joint site inspection of the rectification works.
- 10.1.18 The Successful Tenderer shall inform PUB in writing at least one week before the commencement of any work at the site which affects drains. PUB may require the affected drain to be upgraded in conjunction with the proposal. Please further consult PUB(C&W) with the detailed proposal for further comments.
- 10.1.19 The Successful Tenderer shall engage a Qualified Person (QP), as defined under the Sewerage and Drainage Act 1999 to submit comprehensive drainage plans, including any proposal to level/ backfill the Land Parcel, to the PUB for comments and approval before commencement of works. The drainage plans shall include details of the drainage design such as longitudinal sections showing proposed drain top and invert levels, gradient, ground levels, structural design etc.

10.1.20 Effective erosion and sediment control measures shall be provided by the Successful Tenderer and the QP shall advise the Successful Tenderer to provide such effective measures and facilities with inputs from a Qualified Erosion Control Professional (QECF) (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 measures shall be submitted by the QECF to PUB for approval before commencement of works. All affected watercourses shall be desilted and cleared until completion of work. For reference, the information can be found in the PUB website at <https://www.pub.gov.sg/Professionals/Requirements/Earth-Control-Measures>.

10.1.21 Developments greater than or equal to 0.2 hectares in size are required to control the peak runoff discharge from the development sites. 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 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.

10.1.22 PUB has in 2006 launched the Active, Beautiful and Clean (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 the 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/abcwaters/designguidelines>.

10.1.23 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/abcwaters/certification>. 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 the team at PUBWaters@pub.gov.sg for issues related to ABC Waters design features.

- 10.1.24 The Successful Tenderer shall ensure where there is existing runoff from adjacent premises or roads into or through the development site, the runoff shall continue to be allowed to discharge through the development site.

10.2 Particular Requirement

ST28I

- 10.2.1 Based on the information given by the Catchment and Waterways Department of the PUB, the minimum platform level (“**MPL**”) for ST28I shall not be lower than 4.5m above Singapore Height Datum, or be at least 600mm above the adjacent road/ground level, or any other level as may be specified by PUB, whichever is the highest. The Successful Tenderer is to pre-consult PUB on the required MPL before making DC/BP submission.
- 10.2.2 In complying with the MPL requirement, thorough investigations of the site shall be conducted to determine suitable platform profiles to ensure that the runoff within, upstream of and adjacent to the subject site can be effectively drained away without causing flooding within the site and in the vicinity of the site. Any proposal to level/backfill the subject site shall be submitted to PUB(C&W) for comments and approval.
- 10.2.3 ST28I is within/near 3m(w) drainage reserve (DR) shown in Drainage Interpretation Plan. No structures / services shall be constructed/ laid within the DR. The DR shall be excluded from the site, secured, safeguarded and free from encumbrances. 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://app.sla.gov.sg/inlis>. The Successful Tenderer is advised to carry out thorough site investigation to determine the exact location of PUB’s infrastructures.

In the course of construction, access into the drainage reserve shall not be obstructed. The drainage reserve shall not be used for parking of vehicles/machinery/storage of construction materials/dumping of excavated earth etc. The drainage reserve (including the markers along the boundary of the drainage reserve) shall be reinstated upon completion of works.

- 10.2.4 Surface runoff from ST28I shall direct discharge into the Kranji Reservoir through the pipe culverts as built by SFA.
- 10.2.5 Any proposed services structures shall be located outside the drainage reserves/minimum distance of 300mm away/any other setback distances, as specified by PUB from the drains alongside roads or drains where no drainage reserves are indicated.

10.2.6 All proposed services shall be laid to undercross the drain/Drainage Reserve throughout the full width of the drain/Drainage Reserve or affected drains/box culverts with the following minimum clearance below the invert of the existing or proposed drain:-

- I. 1m for lined drain;
- II. 1.5 m for earth drain or
- III. other minimum clearance as may be specified by the Board.

Details of all proposed undercrossings shall be submitted separately to PUB for comments and clearance.

10.2.7 Necessary precaution measures should be taken to protect the proposed services from future upgrading works.

10.2.8 If the proposed services alignment affects ongoing developments, the service provider shall liaise with the developer on the alignment, size and inverts levels of the existing and proposed drains / culverts, to ensure that PUB's requirements are met.

10.2.9 The Successful Tenderer shall note that ST28I is within Kranji Water Catchment. The proposed development shall not result in any loss of yield from the catchment area.

10.2.10 Stringent pollution control measures shall be incorporated in the design and during the construction of the proposed development.

10.2.11 Bulk storage of toxic and hazardous materials shall not be allowed.

10.2.12 All sewage and sullage water shall be discharged into a public sewer.

10.2.13 If there is any earth filling work at the development site, 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.

10.2.14 If the development site abuts a watercourse (reservoir or storm drain), the Successful Tenderer shall provide and maintain a vegetated buffer strip of minimum 2m width along the length of the boundary abutting the watercourse, within the farm development. The buffer strip can be part of the planting verge set by NParks but there shall be no agricultural activities within the buffer strip.

10.2.15 Water pollution control requirements as stipulated in Environmental Protection and Management Act 1999 ("**EPMA**") shall be fully complied with. The discharge from any agricultural sites into the drainage system shall comply with Allowable Limits for Trade Effluent Discharge to Controlled Watercourses under the Environmental Protection and Management (Trade Effluent) Regulations and PUB's discharge water

quality requirements of Total Nitrogen ≤ 10 mg/L; Total Phosphorus ≤ 0.65 mg/L, Total Organic Carbon ≤ 20 mg/L and Ammonia ≤ 1 mg/L for water catchment areas.

- 10.2.16 The drains within the development site shall be regularly de-silted and maintained.
- 10.2.17 Best management practice (BMP) is to be adopted to prevent the discharge of nutrient-rich water into the watercourse/reservoir. Such BMP could be in the form of a cut-off drain be constructed along the boundary of farming areas to channel all runoff with high nutrient (Nitrogen and Phosphorus) to a treatment pond (as illustrated in Diagram 1) which is designed to treat the pond water to meet the discharge water quality indicated above. Alternative proposals designed and endorsed by a Qualified Person (QP) to meet the discharge water quality requirements can be submitted for PUB's approval.
- 10.2.18 A typical design of a treatment pond to treat the pond water before discharge into the storm drain is shown in Diagram 2 for reference. The design of the treatment pond with sufficient size shall be endorsed by a QP. Some suggested wetland plants that can be used at the treatment pond are shown in Table 1. Details on the construction of wetlands and vegetated swale can be found in the ABC Waters Design Guidelines at <https://www.pub.gov.sg/abcwaters/designguidelines>.
- 10.2.19 Ponds shall be regularly de-sludged and the sludge shall be disposed off-site.
- 10.2.20 No raw animal waste shall be allowed for use as fertilizer in vegetable farming activities.
- 10.2.21 All compost shall be fully composted before use and composting activities (if any) shall be carried out using proper composting facilities in roofed and curbed areas such as concrete flooring to prevent feedstocks from leaching into the ground and entering the storm drain. All feedstocks for composting shall be stored in roofed and curbed areas with impervious flooring.
- 10.2.22 Only pesticides (including herbicides) registered with SFA are allowed to be used in the agricultural activities.
- 10.2.23 All pesticides (including herbicides) shall be used in accordance with the manufacturers' recommendations and guidelines.
- 10.2.24 No fertilizers, soil amendments and pesticides (including herbicides) shall be applied within 2m of storm drain or reservoir.
- 10.2.25 Proper storage and disposal measures shall be taken to prevent any fertilizers, soil amendments, pesticides (including herbicides), and plant waste from entering storm drain. They are to be stored in roofed/properly covered areas.

Requirements for Raw Water (RW) Abstraction System

- 10.2.26 The Successful Tenderer shall not install any piping within the drainage reserve unless otherwise approved by PUB. The Successful Tenderer shall explore all feasible means to route the piping outside of the drainage reserve with the exception of the abstraction point(s) where connection to the drain is required.
- 10.2.27 The raw water abstraction system shall be installed with devices to prevent backflow contamination to the reservoir.
- 10.2.28 The raw water abstraction system shall be installed with proper anchoring system that do not damage reservoir infrastructures.
- 10.2.29 The raw water abstraction system components in contact with water shall be clearly demarcated for visibility to reservoir vessels.
- 10.2.30 All the raw water abstraction system components in contact with reservoir water shall not cause contamination to the water.
- 10.2.31 There shall be a regular maintenance schedule for the raw water abstraction system.
- 10.2.32 The Successful Tenderer should note concerns with raw water (RW) usage: quality fluctuations, high infrastructure costs, and no backup supply during abstraction disruptions. Additional treatment facilities may also be required to make RW suitable for farming purposes.
- 10.2.33 The Successful Tenderer must pre-consult PUB(CWD) with the pumping rate and abstraction pipe alignment once they have firmed up the farming operation. Please note that approval from PUB(CWD) is required before the commencement of work.
- 10.2.34 The Successful Tenderer shall be responsible to construct, own and maintain the RW abstraction infrastructure. The Successful Tenderer shall make provisions for PUB's water meter installation, and note that raw water use is subject to the prevailing RW tariff and Waterborne Tax (WBT).

B. USED WATER

10.3 General

- 10.3.1 The planning of the proposed development shall comply with the prevailing Code of Practice on Sewerage and Sanitary Works [hereafter referred to as the "COPSSW"].
- 10.3.2 The Successful Tenderer shall consult PUB(WRN) with the estimated used water discharge prior to site implementation.
- 10.3.3 The Successful Tenderer shall ensure that the premises is served by an adequate, effective and functional internal sanitary drainage and plumbing system and be connected to public sewers.

- 10.3.4 PUB's approval shall be obtained for any proposed abandonment of sewers/pumping mains/manholes/chambers/drain-lines/ADCs as well as the manner in which they will be abandoned. The Successful Tenderer shall note that the upstream (inlet) and downstream (outlet) ends of the abandoned sewer connections, drain-lines, ADCs or sewers/pumping mains of all sizes shall be sealed watertight with 225mm thick brick plugs rendered with cement mortar.

All abandoned sewers/pumping mains/ADCs of diameter 300mm or larger and abandoned sewers/pumping mains/ADCs of all sizes within the road reserve shall be grouted with cement grout or other approved materials.

All abandoned manholes/chambers are to be demolished, filled up with well compacted approved material, and the manhole frames and covers removed. Details of the requirements can be found in the COPSSW and "Standard Requirements for Abandoning of Disused Sewerage System" for compliance [[https://www.pub.gov.sg/-/media/PUB/PDF/Code-of-Practices-and-Submission-Guidelines/Sewerageand-Sanitary-](https://www.pub.gov.sg/-/media/PUB/PDF/Code-of-Practices-and-Submission-Guidelines/Sewerageand-Sanitary-Works/STD_REQ_SEALING_SEWERCONN_ABANDONEDSEWERS_MANHOLE_S_PUMPING-MAINS_Apr2023_.pdf)

[Works/STD_REQ_SEALING_SEWERCONN_ABANDONEDSEWERS_MANHOLE_S_PUMPING-MAINS_Apr2023_.pdf](https://www.pub.gov.sg/-/media/PUB/PDF/Code-of-Practices-and-Submission-Guidelines/Sewerageand-Sanitary-Works/STD_REQ_SEALING_SEWERCONN_ABANDONEDSEWERS_MANHOLE_S_PUMPING-MAINS_Apr2023_.pdf)].

The abandoned sewers/pumping mains/manholes/chambers/drain-lines/ADCs, including the manner of abandonment (remove, seal, grout, partial demolition, etc.), shall be indicated on the as-built drawings submitted to PUB(WRN). The following details shall also be included:

- a. whether the abandoned sewers/pumping mains/drain-lines/ADCs are removed, grouted or sealed;
- b. For manholes/chambers that are only partially demolished with approval from PUB(WRN), the extent of demolition shall be shown;
- c. the exact extent/length of the abandoned sewers/pumping mains/drain-lines/ADCs that is removed, grouted or sealed;
- d. the exact locations of the watertight seals; and
- e. the type of watertight seals.

- 10.3.5 For minimum clearances of utilities crossing and parallel to sewers, please refer to COPSSW Section 1.2.5. For proposed utilities that are not laid singly, PUB shall be consulted for the clearance required. In addition, pre- and post-construction CCTV inspection shall be carried out on the affected sewers and manholes. The CCTV reports and video shall be submitted to PUB(WRN) Department. A WRc certified CCTV specialist contractor [<https://www.pub.gov.sg/-/media/Images/Feature/Content-Pages/Public/Singapore-Water-Loop/Used-Water/RegisteredCCTVContractor.pdf>] shall be engaged to interpret, prepare, and certify CCTV reports in accordance with PUB (WRN) Department's CCTV inspection requirements. Please note that the defect classification shall be in accordance with the latest edition of the WRc/WAA "Manual of Sewer Condition Classification".

- 10.3.6 No sewerage systems (including abandoned sewers/ pumping mains, any sensors, meters, equipment, instruments, etc. within manholes) shall be altered/interfered with

without the approval from PUB(WRN). Where diversion/removal of any sewer/pumping main is required, it shall be carried out by the Successful Tenderer at his own cost & expense. Details of the diversion (pipe size, gradient, invert level, etc.) shall be submitted to PUB (WRN) for approval before the commencement of works.

- 10.3.7 The Successful Tenderer shall be responsible for seeking approval from all relevant authorities/land owners for the proposed sewerage works to be carried out beyond the development site. Such approval or consent from the land owner/authorities shall not include any conditions that require PUB to provide a letter of undertaking to divert the sewerage infrastructure in future. SFA/Developer/Successful Tenderer is to ensure that all sewerage and sanitary designs comply with PUB's COPSSW.
- 10.3.8 All sewers and manholes shall be readily accessible at all times to PUB for inspection and maintenance.
- 10.3.9 The Successful Tenderer shall check for the presence of public sewerage pipelines by referring to the Sewer Information Plan ("SIP") and through site investigation. The SIP is available on SLA's INLIS at <https://www.sla.gov.sg/INLIS/#/PUB/UP/Search>. The Successful Tenderer shall note that the sewerage information in SIPs is indicative and for reference only. A thorough site investigation, including trial trenches, shall be carried out to determine the exact position and levels of the existing sewers.
- 10.3.10 For development control clearance of the proposed development/building/infrastructure/utility works, and to obtain the clearance certificate for the proposed sewerage/sanitary works, the QP shall prepare the necessary plans and submit the relevant applications via Corenet X or Corenet 2.0 to PUB's Building Plan Division (BPD).
- 10.3.11 Animal waste, including used water from the washing of animal/poultry/aquacultural enclosures/premises (e.g. kennels/cages/tanks), shall not be discharged directly into the public sewerage system.

Animal wastes and sludge generated from pre-treatment plant/facility shall be collected, stabilised, dewatered and disposed of as solid waste. NEA should be consulted for the requirements on the treatment and disposal of animal waste.

Trade effluent refers to any liquid, including particles of matter and other substances suspended in the liquid, that is discharged from any trade, business or manufacture or of any works of engineering or building construction. Any person who wishes to discharge trade effluent into the public sewerage system will need to obtain Written Approval (WA) from PUB(WRN) Department. Please refer to **COPSSW Section 5** on the requirements for trade effluent discharge into public sewerage system.

Trade effluent discharge, including used water generated from aquacultural farms*, from the proposed development into the public sewerage system shall comply with the requirements as stipulated in the Sewerage and Drainage (Trade Effluent) Regulations. The Successful Tenderer is required to assess if a pre-treatment

plant/facility is required to be installed within the development to ensure the compliance of the trade effluent with the discharge requirements. The Successful Tenderer shall be responsible for the provision, operation and maintenance of the pre-treatment plant/facility. Please refer to COPSSW Section 5 on requirements for trade effluent discharge into public sewer. All industrial premises, whether located on individual land lots or within flatted factories, are required to provide a sampling sump which enables representative sampling of trade effluent before it is discharged into the public sewerage system.

All effluents that are prohibited to be discharged into the public sewerage system shall be disposed of in accordance with their respective waste classifications. For example, the disposal of toxic industrial waste (TIW) must be carried out by engaging, a NEA licensed TIW collector. Please consult NEA for more information.

The discharge to the public sewerage system shall not contain any of the substances specified in Regulation 9 of the Sewerage and Drainage (Trade Effluent) Regulations. In particular, the following types of biohazardous wastes shall be properly segregated and not be discharged to the public sewerage system.

- a. Any waste specified in the Environmental Public Health (Toxic Industrial Waste) Regulations. These include pathological, pharmaceutical, chemical and contaminated waste, etc.
- b. Blood waste, infectious waste and other waste contaminated or likely contaminated with pathogens of an infectious disease.
- c. Radioactive waste unless it has been decayed to a safe level in accordance with NEA's requirements.

After obtaining Temporary Occupation Permit (TOP) for the development, the Successful Tenderer shall apply to PUB for a Written Approval (WA) before discharging trade effluent into the public sewerage system. The application for WA for discharge of trade effluent into the sewer can be made online at <https://www.gobusiness.gov.sg/licences>. For further information on matters relating to trade effluent discharge, please email to PUB_WA@pub.gov.sg.

- 10.3.12 Manholes shall not be covered up, paved over or buried under any circumstances. Where there is a need to raise or lower any existing manholes, the Successful Tenderer shall liaise with PUB(WRN) Department's Network Management Branch 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 (i.e. new headroom clearance from the intermediate platform, etc.). 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 WRN. For ad hoc proposals, please contact Mr Muhd Nabil Mohd Raus (email: muhd_nabil_mohd_raus@pub.gov.sg) or Mr Aliff Sufian (email: aliff_sufian_osman_munawar@pub.gov.sg) at Tel 6517 2230 from PUB(WRN) Department.

10.3.13 No building/ structure/piling/retaining structure, etc. (whether temporary or permanent), except lightweight and demountable elements (such as awnings, surface drains, compound boundary wall & fencing, planting troughs and link-way shelters), shall be sited over or across any sewers without the approval of PUB. All proposed structures shall be kept as far away from the existing sewers as possible and no nearer than the following minimum lateral clearances (also known as sewer setback):

Sewer/Pumping Main Nominal Diameter(mm) D	Sewer Depth (m)	Minimum Distance (m)*
≤ 600	≤3	1.0
	>3 and ≤5	1.5
	>5	2.0
> 600 to 1500	All	0.5D + 2.5
>1500 to 2500		0.5D + 3
>2500		0.5D + 4
Deep Tunnel Sewerage System (DTSS)		0.5D + 6
* measured from the outer most edge of the structure, including footings and overhangs, to the centreline of the sewer pipe or DTSS.		

Proposed drains with a maximum width of 2m may over-cross sewers with a minimum vertical clearance of 1m (measured from the bottom of the drain structure to the crown of the sewer pipe) but they shall not be laid parallel to and over the sewer. More details can be found in COPSSW Section 1.2.4.

10.3.14 Where diversion/removal of any sewer/pumping main is required, it shall be carried out by the Successful Tenderer at his own cost & expense. All lateral connections shall be picked up and must not be affected by the proposed sewer diversion. Details of the diversion (pipe size, gradient, invert level, etc) shall be submitted to PUB (WRN) for approval before the commencement of works.

10.3.15 Where there are any Specified Activities (including excavation/tunnelling/jacking/boreholes/installation of ERSS for services diversions) within the public sewer corridor [i.e. 10m for sewer/main of diameter <900mm, 20m for sewer/main of diameter ≥ 900mm and 40m for DTSS tunnel] as stipulated in COPSSW Section 2.1.2, a written approval from the Director, Water Reclamation Network (WRN) Department of 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 COPSSW Section 2 for the technical requirements on sewer protection.

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 QP/contractor is required to submit a notification to our Network Management Branch (NMB) at least 7 days before the commencement of any works or specified activities within the public sewer corridor.

- 10.3.16 The Successful Tenderer shall take every measure to protect all existing sewers, particularly large ($\geq 900\text{mm}$ diameter) sewers, affected by or in close proximity of the proposed works.

10.4 Particular Requirements

ST28I

- 10.4.1 There are existing 300mm diameter sewers and internal drain lines within/in the vicinity of the proposed site. The Successful Tenderer shall ensure that the premises is served by an adequate, effective and functional internal sanitary drainage and plumbing system and be connected to public sewers. Sewer connection shall be made to the existing $\varnothing 300\text{mm}$ sewer fronting the site via MH ID 3481516 using the 200mm diameter advance drain-line connection (ADC). The 200mm diameter ADC, which has been included in the sale of the land parcel, shall become part of the development's internal sanitary plumbing and drainage system which would be owned and maintained by the owner/occupier of the completed development.

The internal sanitary plumbing and drainage system, including the 200mm diameter ADC, serving the development shall comply fully with PUB's requirements and the COPSSW. The Successful Tenderer shall take over the ADC in its as-is condition and, at his own cost and expense, carry out all necessary rectification works on the ADC, including total reconstruction, where necessary. The internal sanitary plumbing and drainage system, including the 200mm diameter ADC, shall be in a good working condition and is subjected to PUB's inspection and acceptance, before clearance can be issued by PUB for the completed development.

The 200mm diameter ADC shall be considered as the Successful Tenderer proposed work and included in the detailed sewerage/sanitary proposal for the development to be submitted to PUB(BPD) for approval. The ADC, complete with details such as pipe size, invert levels and X-Y coordinates, shall also be reflected in the sewerage/sanitary as-built drawings. The proposed sanitary/sewerage works must not start before approval is received from PUB.

If the ADC is not utilised, the ADC shall be abandoned and the affected public sewer manhole and/or public sewer properly reinstated by the occupier of the development at his own cost and expense. Details of the proposed abandonment of the ADC and sealing of openings shall also be included in the detailed sewerage/sanitary proposal. The abandoning of the unused ADC shall comply to the requirements stipulated in the prevailing Code of Practice on Sewerage and Sanitary Works.

Any facilities or buildings (e.g. toilet, wastewater treatment facility etc) where used water will be generated must be sited on high ground (> 106.05 mRL). Should such facilities/buildings be sited at ground lower than this level, ejector(s) would be required. This is needed to prevent backflow to the property in the event of high used water level in the sewer due to sewer blockage. If ejectors are not used, Owner shall need to ensure that the floor level of the house and the levels of the sanitary appliances, floor traps and inspection chambers shall be constructed suitably higher than the top level of the manhole to which the sanitary drainline is connected, as stipulated in COPSSW.

C. WATER SUPPLY

10.5 General

- 10.5.1 The Successful Tenderer shall liaise with the Water Supply (Network) Department of the PUB Public Utilities Board (PUB) on the requirements for water supply to ST28I.
- 10.5.2 The Successful Tenderer may contact ANG LIEW KWEE (email: ANG_LIEW_KWEE@PUB.GOV.SG), WANG QIONG (email: WANG_QIONG@PUB.GOV.SG), from PUB(WSN), if any clarifications are required.
- 10.5.3 If water supply is required, the applicant 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.

Notwithstanding the modes of supply stipulated in SS 636, storage tanks of capacity equivalent to one day's water requirements shall be provided for the proposed farm if the water supply is considered critical to the operations. As a pumping system and storage tanks are required to be installed, the applicant shall engage a Professional Engineer to submit the Notification of WSI Works together with a set of drawings to the Centralised Services Department.

- 10.5.4 Provision shall be made by the Successful Tenderer for PUB to lay new watermain along the proposed public road reserves / sidetables to the proposed site. Please note that PUB will only lay new watermain on LTA public road reserves. If any new roads to be constructed are not LTA public road reserves, then PUB will not be laying new watermain in these roads. The Successful Tenderer will have to lay its own water service pipes to the development.
- 10.5.5 A set of guidelines for water conservation is contained in **Annex D** hereto.

10.6 Particular Requirements

For ST28I

- 10.6.1 PUB can only support a PW demand of 0.0007 mgd at ST28I currently. The Successful Tenderer shall provide the estimated PW demands and completion date of the developments so that PUB(WSN) can advise whether the existing water supply network is able to support.
- 10.6.2 The proposed development is in close proximity to PUB's proposed/under-construction/existing water pipes.
- 10.6.3 The Water Supply Plan (**Annex E**) shows the approximate positions of our proposed/underconstruction/existing water pipes of 100 mm diameter and above in the vicinity of the proposed site. 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, please determine by means of trial holes within your worksite to ascertain the exact alignment and levels of all the proposed/under-construction/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.
- 10.6.4 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 your proposed development and the cost of diversion of any water pipes shall be fully borne by the developer. 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.
- 10.6.5 If there are works within the water pipe corridor, please 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 our online portal, Protection Of Water and Sewer pipes (POWS) at <https://www.eservices.pub.gov.sg/bpp/account>.
- 10.6.6 For queries on matters relating to water pipes please contact PUB(WSN) officer at Tel: 68852475/68852477 or Email: PUB_WSN_WESTBU@pub.gov.sg. For diversion of water mains, please contact PUB(WSN) officer Leonard Chay at leonard_chay@pub.gov.sg.

11.0 COMPLIANCE WITH TECHNICAL CONDITIONS OF RELEVANT AUTHORITIES

- 11.1 The Successful Tenderer is required to consult and comply with all the technical conditions imposed by the relevant Authorities such as the Lessor, NEA, PUB, PowerGas, SPPG, MINDEF, SCDF, LTA, NParks and the URA et cetera in respect of the farm development plan, the detailed development control and building plan stages.

ANNEX A

Notes for Working near PowerGas Transmission Pipeline

ANNEX B

Requirements for Distribution Gas Pipe Diversion Works

ANNEX C

Fire Safety Act 1993 and Regulations

ANNEX D

Water Conservation Guidelines

ANNEX E

Water Supply Network Plan

