

**For discussion
on 19 November 2019**

Legislative Council Panel on Development

**Creation of Directorate Posts in
Development Bureau and Lands Department
for Rolling Out the Common Spatial Data Infrastructure**

PURPOSE

In June 2019, this Panel expressed support for the Administration submitting the funding application of \$300 million to the Finance Committee (FC) for rolling out the Common Spatial Data Infrastructure (CSDI). This submission seeks Members' support for creating the following two supernumerary posts to strengthen the directorate staffing complement in Development Bureau (DEVB) and the Lands Department (LandsD) for taking forward the CSDI initiative amongst other things –

- (a) one supernumerary Chief Land Surveyor (CLS) (D1) post, to be designated as Chief Land Surveyor/Spatial Data Infrastructure (CLS/SDI), for five years up to 31 March 2025, to lead the newly established Spatial Data Office (SDO) in the Planning and Lands Branch of the Development Bureau (DEVB(PLB)) in steering and expediting the development of CSDI amongst other things; and
- (b) one supernumerary Government Land Surveyor (GLS) (D2) post, to be designated as Assistant Director/Mapping Management (AD/MM), for five years up to 31 March 2025, to head the Mapping Management Centre (MMC) to be established in the Survey and Mapping Office (SMO) of the LandsD for supporting the rolling out of CSDI, and

overseeing the work of the Building Information Modelling (BIM) and land boundary advisory services amongst other things.

JUSTIFICATIONS

2. Enhancing the use, management, discovery and sharing of spatial data¹ is increasingly recognised worldwide as the key to robust policy-making and driving innovation and value creation of society. Advanced economies such as Singapore, the United Kingdom and the United States have long built their own spatial data infrastructure facilitating spatial data sharing and usage by the Government and the public. Acknowledging that spatial data infrastructure is vitally important to smart city development, the Smart City Blueprint released in December 2017 has committed to developing the CSDI with two major components, viz. an internet-based portal (the CSDI portal) and the three-dimensional (3D) digital map.

3. The **CSDI portal** functions as a one-stop data supermarket opening up and centralising multi-source spatial data converted into open and machine-readable formats and available for free download and use by the public. The map of Hong Kong will form the base of the one-stop database which, when intersected with other spatial datasets such as location of public facilities or demographic data, can enable government bureaux/departments (B/Ds), professionals, academics and the general public to harness the power of big data. Not only can the CSDI portal create daily convenience (such as journey planning between destinations), it can also enhance policy making functions (such as urban planning and infrastructure development). More importantly, it can spur innovation and encourage the public including application developers to make the most of the spatial data for development of new web and mobile applications.

4. By providing a more detailed, realistic and true view of the real world, the **3D digital map** can help better understand multi-level spaces of a modern city like Hong Kong. The 3D digital map will eventually replace the 2D digital map to serve as the basemap and container of the CSDI portal. It can also support 3D applications including visualisation, noise/air/flooding modelling, indoor/outdoor navigation, etc. to support land administration, urban planning, transportation management, etc. undertaken by B/Ds.

¹ Spatial data is the data with a location component such as geographical coordinates. Examples of spatial data held in B/Ds are topographic maps, public facility data, land boundary data, planning data, etc.

5. With the earmarking of \$300 million in the 2019-20 Budget, we aim at advancing the full operation of the CSDI portal to end 2022 (one full year earlier than our original target) and making available the 3D digital map of the whole territory by 2023. We consulted this Panel² and the Land and Development Advisory Committee (LDAC)³ on the funding application of \$300 million in June and July 2019 respectively. Both bodies strongly supported the two initiatives of the CSDI portal and 3D digital map. Suggestions received include releasing more government data beyond DEVB's family of departments and private sector data such as real-time bus arrival information and underground utilities onto the CSDI as soon as possible; and more engagement with stakeholders to better align the CSDI design with the public expectation.

Need for Additional Directorate Resources in DEVB and LandsD

6. DEVB and LandsD will assume a leading role in taking forward the CSDI implementation, with the support of the Innovation and Technology Bureau, Office of the Government Chief Information Officer, and other B/Ds. To enable delivery of the CSDI initiative under a compressed timetable, there is strong operational need to strengthen the directorate resources in DEVB and LandsD.

Proposed Supernumerary CLS (D1) Post in the SDO of DEVB(PLB)

7. To guide our work in the years ahead, we have developed a tentative workplan with a view to attaining the target of the CSDI portal in full operation by end 2022 (please see Table 1 of **Enclosure 1**). Specifically, between now and 2022, we will enhance and transform the Hong Kong GeoData Store under LandsD's management into the CSDI portal with initial focus on spatial data held by DEVB's family of departments. We will roll out the CSDI portal with about 70 additional datasets in phases (on top of the 79 datasets currently under the Hong Kong GeoData Store), first within Government by end 2021 and then to the public by end 2022. Subject to FC's approval of the \$300 million funding application, we will also launch in the coming year or so four quick win projects for use within and/or outside Government, viz. Map Application Programming Interface⁴, Geotagging

Encl. 1

² Panel on Development LC Paper No. CB(1)1181/18-19(05) refers.

³ LDAC is an advisory committee under DEVB to advise the Government on policies and measures in relation to planning, land and buildings matters. It is chaired by a non-official with most members representing the professional, academic and other sectors of the community.

⁴ A web mapping service for the public and private sectors to support their web applications that require map display. It enables the community to build innovative applications enriching with the locational and

Tool⁵, Address Data Infrastructure⁶, and District-based Spatial Information Dashboard⁷. The CSDI will continue to evolve and expand beyond 2022 with the release of more government spatial data outside DEVB's regime. In the longer run, we should realise more fully the potential of CSDI by securing the co-operation of the private sector including public transport operators and utility companies to make available their spatial data for sharing through the CSDI portal.

8. Within DEVB, the newly established SDO staffed by a multi-disciplinary team⁸ would be responsible for steering the CSDI development through a range of functions. These include formulation and application of spatial data policy⁹ and measures in consultation with B/Ds; development of a detailed implementation plan for progress monitoring; early identification of potential implementation problems and mapping out possible solutions; regular high-level liaison with B/Ds to solicit their support and enhance their readiness for CSDI participation; collaboration with B/Ds to develop common applications based on spatial data; formulation and execution of plans for capacity building and public engagement; and overseeing the operation of various committees and working groups set up to support the CSDI implementation.

9. The SDO should be headed by a professional grade officer with technical competency and professional know-how in spatial technology (e.g. spatial data processing, spatial database management, web map portal development and standard development), digital infrastructure, data interoperability, quality control and cartography, as well as domain knowledge. The post should be pitched at a sufficiently senior level as the SDO head is expected to contribute strategic inputs and macro thinking in the formulation of spatial data policy and measures. The post-holder will also need to work with stakeholders of different backgrounds including B/Ds, the private sector, professionals, academia, etc. He/she should be

other features such as virtual city navigation.

⁵ A tool to convert non-spatial data (e.g. demographic data) or ground features into spatial data.

⁶ To standardise location identifiers across departments, to avoid confusion in identifying buildings/premises, allowing B/Ds to improve public services, such as postal delivery, assessment of rateable value, emergency services and management of complaint cases (e.g. calling by 1823).

⁷ A web-based application that uses charts, gauges, maps, and other visual elements to provide public and private sectors with consistent, up-to-date and consolidated spatial information. In short, a dashboard assimilates different online information and provides data analytics. It has been commonly used for city management as well as an understanding of public sentiments and trends in other places.

⁸ The existing manpower of SDO consists of one Senior Land Surveyor, one Senior Systems Manager, one Land Surveyor, one Town Planner and one Assistant Clerical Officer, which are created on a 5-year time-limited basis in 2019-20.

⁹ Our policy intent is to encourage B/Ds to release spatial data for sharing through the CSDI portal for free, unless there are legitimate policy and/or operational reasons for not doing so. To what extent this can be applied to individual cases will be subject to discussion with respective B/Ds.

experienced enough and possess the calibre, maturity and tactfulness in conducting negotiations with people from different bodies and convincing them about the significance of the CSDI and securing their cooperation to work towards the common goal. Moreover, after the launch of the CSDI portal and 3D digital map by end 2022 and 2023 respectively, he/she will need to continue to lead the SDO for releasing more spatial data owned by different stakeholders, overseeing the continual operation of the portal, identifying room for improvement and making a longer term strategic plan in order to achieve sustainable development for the CSDI. In the light of the above, we propose creating one supernumerary CLS (D1) post, to be designated as CLS/SDI for five years up to 31 March 2025 to lead the SDO.

10. Within the Planning Unit of DEVB(PLB) there is the Land Supply Information System (LSIS) Team comprising five permanent professional and technical posts responsible for supporting various policy teams in tracking land creation initiatives based on spatial data and related technologies as well as mapping information. The proposed CLS post will also supervise the LSIS Team apart from the team of staff in SDO. This can achieve operational synergy and enhance support in spatial data analytics for DEVB and its family of departments on various land supply initiatives.

Encl. 2 11. The proposed job description of the supernumerary CLS/SDI
Encl. 3 post is at **Enclosure 2**. The proposed and existing organisation charts of
Encl. 4 DEVB(PLB) for the implementation of the CSDI are at **Enclosures 3 and 4**
respectively.

12. To provide the necessary support to the proposed CLS/SDI post, seven new non-directorate time-limited posts from professional, technical and secretarial grades will be created in 2020-21.

Proposed Supernumerary GLS (D2) Post in LandsD

13. The SMO of LandsD with its wealth of experience in mapping and surveying will play a key role in the CSDI implementation in two aspects. First, for the CSDI portal, the SMO will provide strong technical support for the SDO in designing the overall architecture of the CSDI portal riding on the Hong Kong GeoData Store currently under its management. Apart from delivering the four quick win projects in paragraph 7 above, the SMO is also responsible for setting data standards for compliance by B/Ds in releasing their spatial data onto the CSDI portal. Second, in tandem with the development of the CSDI portal, the SMO will further develop and upgrade

Encl. 1

the existing 2D digital map into a full-fledged 3D digital map as the basemap and container for CSDI covering the entire territory by end 2023 (please refer to the tentative workplan in Table 2 of **Enclosure 1**). There is a pressing need for the SMO to formulate a holistic framework for 3D digital map covering the fundamental positioning infrastructure; common spatial data and technology standard for compliance by B/Ds and other stakeholders; 3D digital map standards; and the strategy, framework and action plan for the development of 3D digital map through collection, integration, distribution and sharing of quality 3D spatial data.

14. The BIM data forms a valuable data source for developing 3D digital map. As capital works projects costing more than \$30 million are mandated to use BIM technology, the volume of BIM data kept by various works departments is expected to grow exponentially. To ensure smooth integration of the BIM data with the 3D digital map, the SMO will collaborate with works departments to agree on 3D spatial data standards to be followed by works departments in collecting and storing BIM data required by the 3D digital map.

15. In view of the scope and complexity of these multi-faceted issues and the growing public aspiration for the CSDI portal and 3D digital map, there is a need for a dedicated directorate officer at D2 level in LandsD to provide strategic thinking and leadership in supporting the roll-out of the CSDI portal, as well as taking forward the development of the 3D digital map. Specifically, we propose creating a new GLS (D2) post for five years up to 31 March 2025 in the SMO of LandsD to lead the new MMC responsible for providing support to SDO in the CSDI implementation and developing the 3D digital map.

16. The GLS will steer the MMC in the formulation of directions, standards, implementation plans, as well as collaboration with key stakeholders, in the 3D digital map development of the whole territory, and resolve differences with B/Ds to arrive at a practicable solution with the target of delivering the 3D digital map of the whole territory in phases by end 2023. The GLS will develop action plans on the creation of the initial set of 3D digital map for the whole territory and formulate the strategy for on-going updating and maintenance to support various functions including land management, urban planning, land development, transportation, disaster and emergency analysis undertaken by B/Ds. The GLS will also formulate the strategy for integration between BIM and Geographic Information System (GIS) to promote applications on spatial-temporal analytic and multi-dimension simulations, as well as 3D data management among different B/Ds.

17. Another core role of SMO is delineation of land boundary for the whole territory. Apart from providing professional advice on the land boundary matter to support the land administration in LandsD, it is crucial for SMO to extend its land boundary advisory and survey services to support other B/Ds for their carrying out statutory enforcement actions. The boundary data will become one of the core sets of spatial data in support of land administration under the CSDI portal. The GLS will be tasked to lead and oversee the provision of the land boundary delineation services for other B/Ds in the latter's discharge of their statutory functions.

18. In order to accomplish the above committed tasks, the GLS will have to oversee the structural review and implement the organisation changes by phases thereafter. The duties and responsibilities mentioned in the above paragraphs will also extend beyond the completion of the operation of CSDI portal and 3D digital map by 2022 and 2023 respectively.

19. Currently there is only one GLS in SMO who is already overloaded with his existing work portfolio. To strengthen SMO's capability in taking forward the important initiatives to develop the 3D digital map and the CSDI portal, the proposed GLS will take up the responsibility of overseeing the Land Information Centre (LIC) from the existing GLS, given that support from LIC is operationally crucial to the implementation of the 3D digital map and CSDI portal.

Encl. 5 20. The proposed job description of the supernumerary GLS (D2)
Encl. 6 post is at **Enclosure 5**. The existing and proposed organisation charts of
Encl. 7 SMO in LandsD are at **Enclosures 6 and 7**.

21. In addition to the above directorate staffing proposal, a total number of 13 non-directorate time-limited posts from professional, technical and clerical grades will be created in 2020-21 in the MMC.

ALTERNATIVES CONSIDERED

22. We have critically examined the possible redeployment of other existing directorate officers within DEVB(PLB) to take on the work of the proposed CLS/SDI post. At present, these directorate officers are fully occupied and overloaded with the ongoing and new tasks relating to increasing and expediting land supply, and have no spare capacity to take up the development of the CSDI portal. Nor do they have the required professional knowledge and experience in spatial technology and CSDI development. Hence, internal redeployment is not viable.

Encl. 6 23. For LandsD, there is only one GLS (Assistant Director/Survey & Mapping (AD/SM) at D2) as shown at **Enclosure 6**. The AD/SM is already overloaded with his/her existing work portfolio, including overseeing the operation of the SMO Headquarters, Land Information Centre, New Territories Survey Division and Urban Survey Division involving over 1 040 staff. The workload of the AD/SM has been further increased in recent few years to oversee the survey, mapping and spatial data support for major initiatives such as increasing land supply, resumption at New Development Areas, Three Runway System, land control and lease enforcement, etc. The advisory services on survey, mapping and GIS matters under AD/SM's charge has also been extended to other B/Ds such as the East Kowloon Energizing Office, Home Affairs Department (permitted burial grounds), Fire Services Department (Fourth Generation Mobilising System) , Marine Department (East Asia Regional Electronic Navigational Chart), etc. The AD/SM is already fully engaged in his existing work and is operationally unable to take up additional duties without adversely affecting the discharge of his current duties.

FINANCIAL IMPLICATIONS

24. The proposed creation of one supernumerary CLS post in DEVB(PLB) and one supernumerary GLS post in LandsD will involve an additional notional annual salary cost at mid-point of \$4,016,400. The additional full annual average staff cost, including salaries and staff on-cost, is \$6,511,000. A breakdown is shown below –

Bureau / Department	Directorate Post	No.	Notional annual salary cost at mid-point (\$)	Full annual average staff cost (\$)
DEVB(PLB)	CLS (D1)	1	1,836,600	2,760,000
LandsD	GLS (D2)	1	2,179,800	3,751,000
	Total:	2	4,016,400	6,511,000

25. The seven non-directorate posts to be created in DEVB(PLB) in 2020-21 as mentioned in paragraph 12 above will involve additional notional annual salary cost at mid-point of \$5,233,440 and full annual average staff cost, including salaries and staff on-cost, of \$7,910,000. The 13 non-directorate posts to be created in LandsD in 2020-21 as mentioned in paragraph 21 above will involve additional notional annual salary cost at

mid-point of \$8,244,300 and full annual average staff cost, including salaries and staff on-cost, of \$13,377,000. We will include the necessary provision in the 2020-21 draft Estimates of DEVB(PLB) and LandsD to meet the cost of the staffing proposal and will reflect the resources required in the Estimates of subsequent years.

ADVICE SOUGHT

26. Members are invited to consider the staffing proposals. Subject to Members' views, we will proceed to seek the endorsement of the Establishment Subcommittee and the approval of the FC.

**Development Bureau
October 2019**

Table 1: Implementation Schedule for Common Spatial Data Infrastructure (CSDI)

Rolled-out Time	Deliverables
For internal use within Government by end 2021	Releasing through the CSDI portal about 70 additional data sets under DEVB's family of departments on top of the 79 data sets already available on the Hong Kong GeoData Store.
Between the latter half of 2019 and 2021	Launching quick-win projects for use within and/or outside Government, including Map API, Geo-tagging Tool, Address Data Infrastructure and District-based Spatial Information Dashboard.
CSDI in full operation and for use by the public by end 2022	Opening up the above 70 + 79 data sets for free download and use by the public.
Beyond 2022	Releasing more data sets through the CSDI, subject to further discussion with B/D data owners on issues including data standardisation, availability of API data service, etc.

Table 2: Implementation Schedule for Three-dimensional (3D) Digital Map

Rolled-out Time	Deliverables
By late 2019 /early 2020	Publish the 3D pedestrian network data covering the whole territory.
Between latter half of 2019 and 2023	Publish the 3D digital map showing topographical and exterior features of terrain, buildings and infrastructures, initially covering Hong Kong Island, Kowloon and some new town areas, and the other areas of the territory eventually.
By end 2023	Extend the 3D digital map to cover the accessible interior of buildings and structures and publish 3D digital map showing the interior layout for 1 250 buildings.

**Proposed Job Description of
Chief Land Surveyor (Spatial Data Infrastructure)**

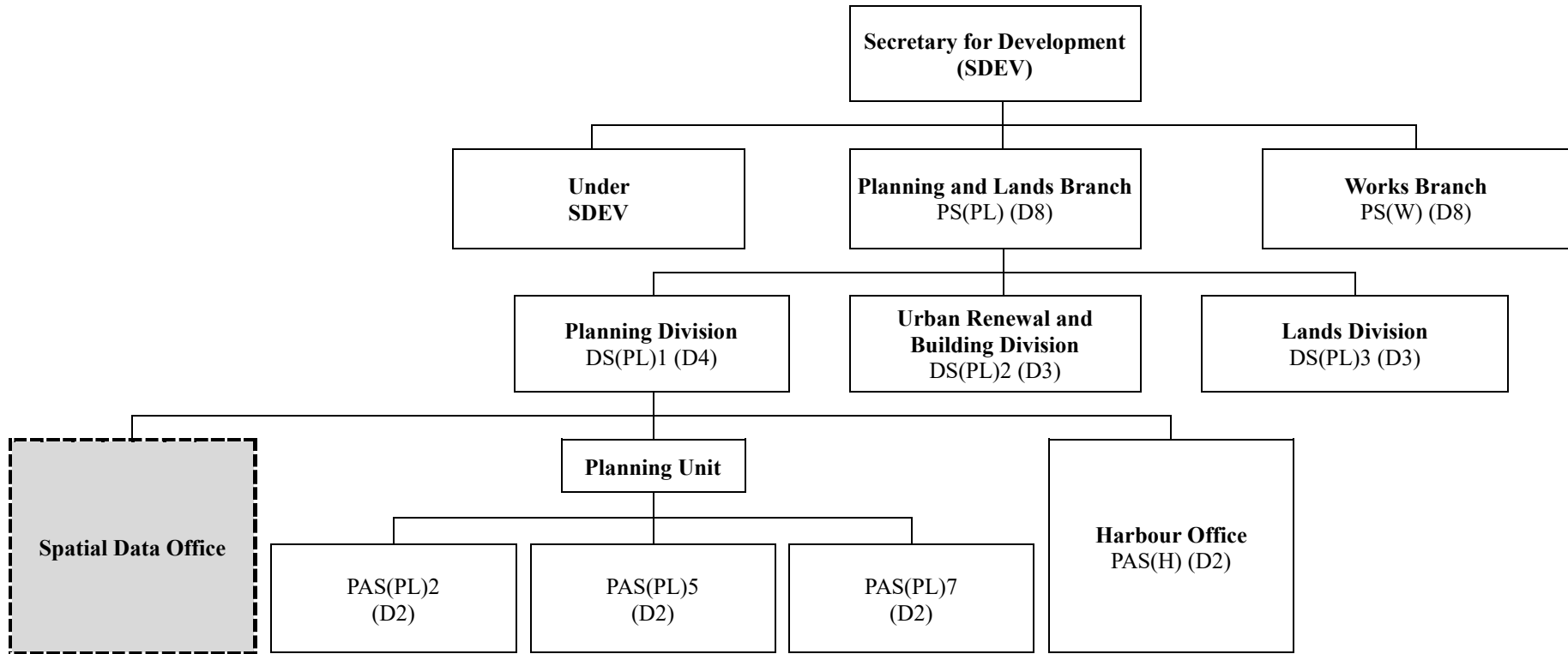
Rank: Chief Land Surveyor (D1)

Responsible to: Deputy Secretary (Planning & Lands)1 (DS(PL)1)


Main Duties and Responsibilities

1. To coordinate Bureaux/Departments (B/Ds) in formulation of policies, strategies and measures in relation to the Common Spatial Data Infrastructure (CSDI) and related initiatives;
2. To formulate the overall implementation plan of CSDI including the launch of the CSDI portal and quick-wins projects, and monitor their implementation and the spending of funds allocated for the implementation of the CSDI portal;
3. To liaise with the senior management of B/Ds with focus on Development Bureau's family of departments initially, as well as that of other B/Ds and other stakeholders outside the Government, to secure their buy-in and participation in the CSDI portal, and identify potential implementation problems and map out possible solutions;
4. To co-ordinate B/Ds' efforts in developing common applications using spatial data and consider the interface between such applications and CSDI;
5. To formulate and execute the capacity building plan and stakeholders engagement plan to build capacity and foster partnership with B/Ds and external stakeholders;
6. To oversee the secretariat services for the Common Spatial Data Steering Committee and Common Spatial Data Advisory Committee, as well as various working groups formed under these Committees;
7. To oversee the day-to-day operation of the Spatial Data Office (comprising Data and Application Advisory Services Team, Platform Development and Application Facilitation Team, and Capacity Building and Outreach Team) and the Land Supply Information System Team; and
8. To undertake any other duties as assigned by DS(PL)1.

Existing Organisation Chart of Development Bureau (Planning and Lands Branch)

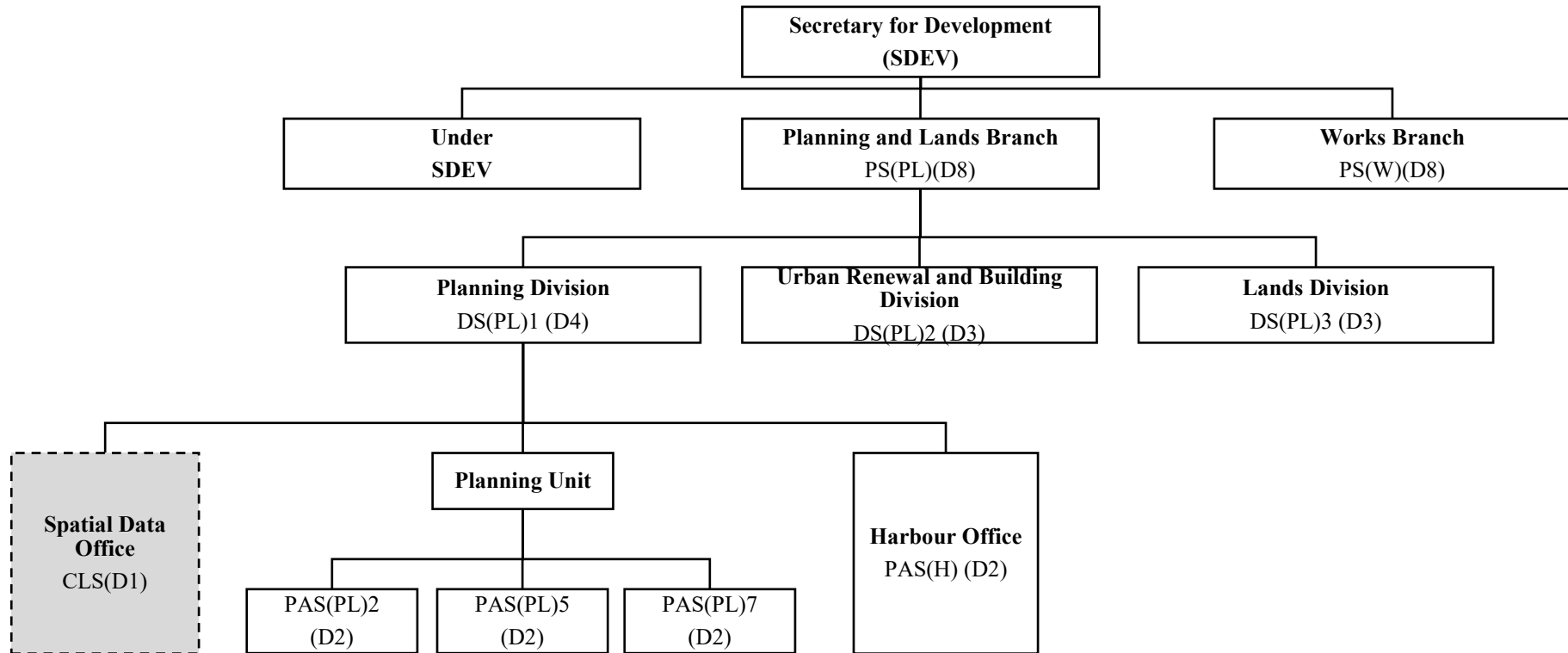


Legend

- | | | |
|--|---|--|
| DS(PL) - Deputy Secretary (Planning and Lands) | PS(PL) - Permanent Secretary (Planning and Lands) | Under SDEV - Under Secretary for Development |
| PAS(H) - Principal Assistant Secretary (Harbour) | PS(W) - Permanent Secretary (Works) |  - Five professional and clerical officers created in 2019-20 |
| PAS(PL) - Principal Assistant Secretary (Planning and Lands) | SDEV - Secretary for Development | |

Enclosure 4

Proposed Organisation Chart of Development Bureau (Planning and Lands Branch)



Legend

CLS - Chief Land Surveyor

DS(PL) - Deputy Secretary (Planning and Lands)

PAS(H) - Principal Assistant Secretary (Harbour)


PAS(PL) - Principal Assistant Secretary (Planning and Lands)

PS(PL) - Permanent Secretary (Planning and Lands)

PS(W) - Permanent Secretary (Works)

SDEV - Secretary for Development

Under SDEV - Under Secretary for Development

 - Proposed supernumerary CLS post

**Proposed Job Description of
Assistant Director / Mapping Management**

Rank : Government Land Surveyor (D2)

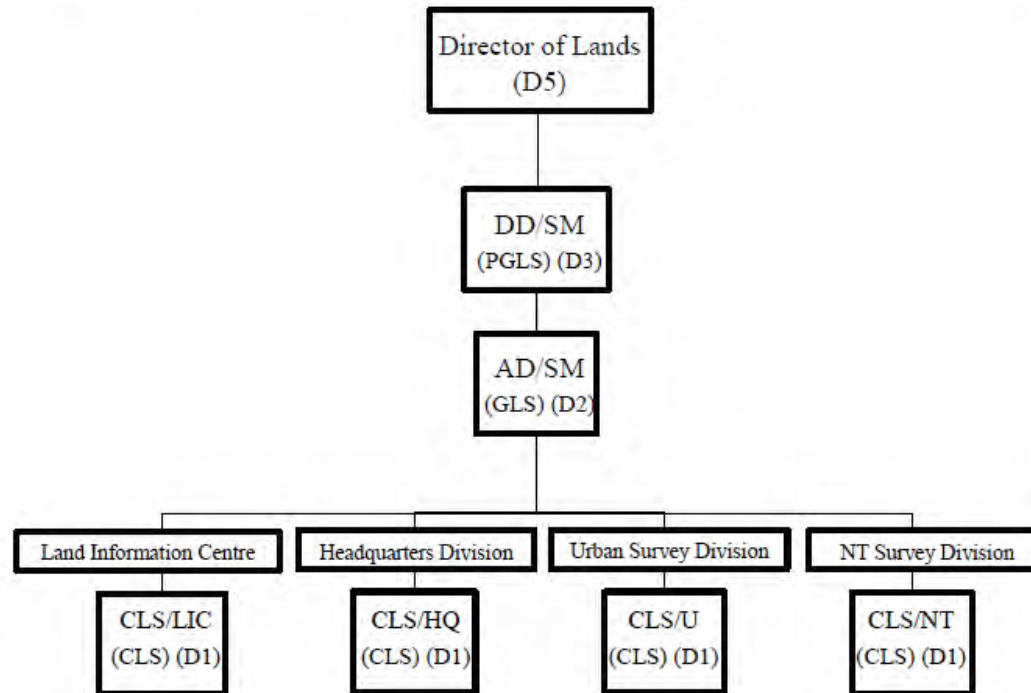
Responsible to : Deputy Director / Survey and Mapping

Main Duties and Responsibilities –

1. To act as the head of the Mapping Management Centre and Land Information Centre;
2. To work with Spatial Data Office of Development Bureau in the development and implementation of the Common Spatial Data Infrastructure (CSDI) under broader policy initiatives including data standards for the CSDI portal, open data strategy and the smart city initiatives, and provide strategic advice for the development and application facilitation;
3. To formulate overall strategy, spearhead policy, measures standards and guidelines in relation to CSDI development, three-dimensional (3D) Digital Map, Building Information Modelling (BIM) implementation, Geographic Information System (GIS) support, BIM/GIS integration, open spatial data adoption, positioning infrastructure enhancement and other new initiatives;
4. To oversee the creation of the initialised 3D digital map for the territory and formulate the strategy for on-going updating and maintenance of the digital map to support various functions of the Lands Department;
5. To collaborate with works departments on formulating BIM implementation plan, BIM-GIS integration, interfacing and harmonisation of BIM implementation and establishing mechanism to share BIM data among bureaux/departments (B/Ds);
6. To formulate spatial data policy and spatial data standards to facilitate the establishment of CSDI and promote the importance of data standards among different B/Ds;
7. To oversee the provision of land boundary advisory and survey services to support other B/Ds for their carrying out of enforcement actions in discharging statutory functions; and

8. To keep close liaison with Highways Department and Civil Engineering and Development Department in respect of survey and GIS matters; and
9. To undertake any other duties as assigned by Deputy Director / Survey and Mapping.

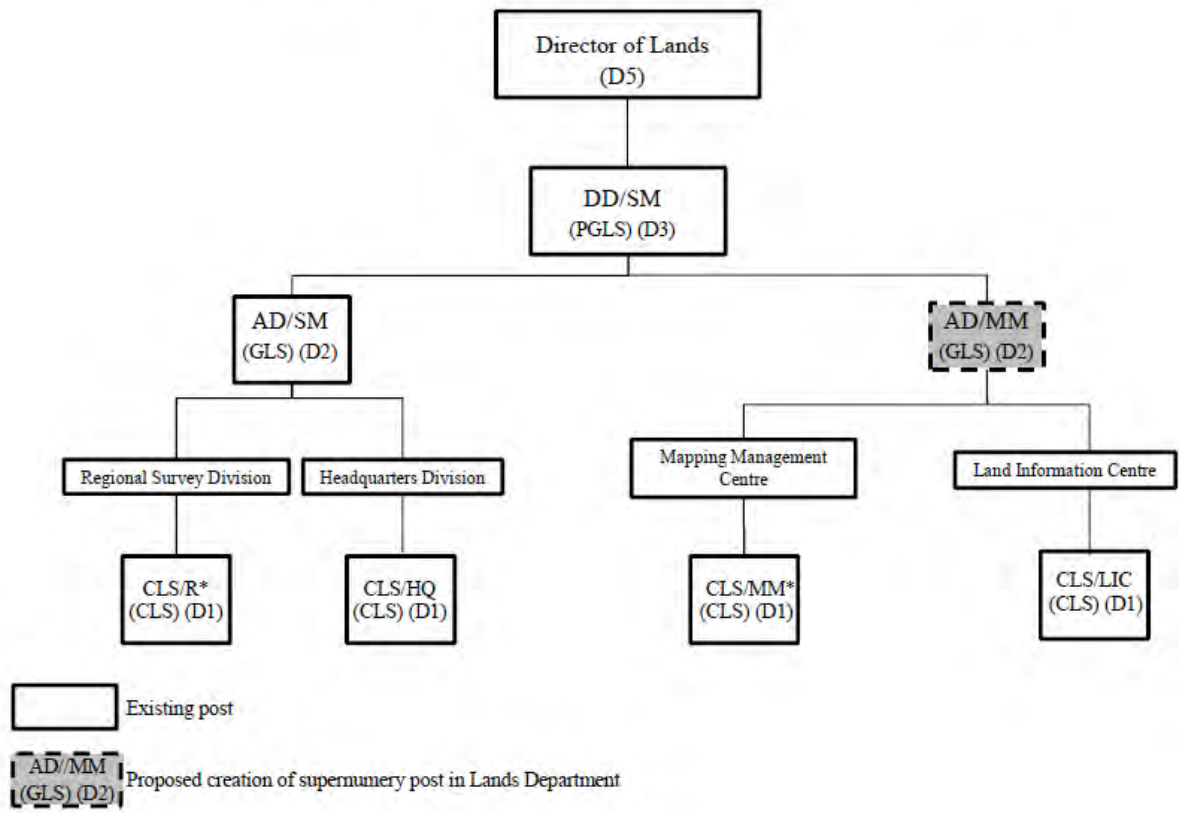
Existing Organisation Chart of Survey and Mapping Office, Lands Department



Legend:

- DD/SM Deputy Director/Survey & Mapping
- AD/SM Assistant Director/Survey & Mapping
- CLS/LIC Chief Land Surveyor/Land Information Centre
- CLS/HQ Chief Land Surveyor/Headquarters
- CLS/U Chief Land Surveyor/Urban
- CLS/NT Chief Land Surveyor/New Territories

Proposed Organisation Chart of Survey and Mapping Office, Lands Department



Legend:

DD/SM	Deputy Director/Survey & Mapping	HQ	Headquarters
AD/SM	Assistant Director/Survey & Mapping	LIC	Land Information Centre
AD/MM	Assistant Director/Mapping Management	MM	Mapping Management
CLS	Chief Land Surveyor	R	Region

* Retitled from existing CLS/Urban (CLS/U) and CLS/New Territories (CLS/NT). The duties of CLS/U, CLS/NT and CLS/HQ are internally reshuffled.