Implementation of Data Alignment Measures for the Alignment of Planning, Lands and Public Works Data

Final Report (Volume 2C)
Specification and Explanatory Notes of Lot CSU

March 2004

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Volume 2C – Specification and Explanatory Notes of Lot CSU

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1 Introduction

1.1 General Overview

1.1.1 The Lot Common Spatial Unit (Lot CSU) is a standard common spatial unit, comprising spatial data and a set of common attributes, which is defined to facilitate business collaboration that requires exchange of geospatial data of lot.

1.1.2 This document gives the specification of Lot Common Spatial Unit (Lot CSU) which shall be followed by all participating departments in the data exchange process. Participating Departments are not obliged to adopt the same specification for their internal systems.

1.1.3 The CSU specification includes 4 major components:

(a) CSU Definition – to describe the scope covered in the CSU, the rules adopted for the delineation of CSU polygons, the CSU Identifier to uniquely identify a CSU, and the data custodianship;

(b) CSU Workflow – to describe the processes and workflows involved in the production and exchange of CSU data during different stages of a CSU lifecycle;

(c) CSU Data Interface Requirement – to describe the logical structure of CSU data exchanged between the interfacing systems of PDs;

(d) Maintenance of the CSU – to describe the regular mode and frequency of data provision by Data Owners, and dissemination by the Data Agent.

1.2 Enquires

1.2.1 Any enquires to the specification shall be referred to the DAM Management Committee, c/o HPLB.

2 CSU Definition

2.1 Overview

2.1.1 Lot information is core to the business of the PDs of HPLB and FSTB. Works Departments of ETWB would require similar information in the delivery of works projects. To meet the common interest of the PDs, the Lot CSU shall mean the lots discussed in section 2.2.

2.2 Scope

2.2.1 The legal meaning of lot is defined in various sources. In general term, lot is defined ***as any piece or parcel of ground, the subject of a Government Lease*** – definition adopted from Land (Compulsory Sale for Redevelopment) Ordinance, Government Rights (Re-Entry and Vesting Remedies) Ordinance, and Government Rent and Premium (Apportionment) Ordinance.

2.2.2 Given the business need of the PDs, the scope of the Lot CSU would include the LOT and OVERLAP LOT layers currently maintained by LandsD in their C1000 Library. These contains the New Grant Lot, Old New Grant Lot, Old Schedule Lot, Permanent Government Land Allocation, Temporary Government Land Allocation, Government Land Without Formal Allocation, Extension, Reclamation, Lots, Defence Lot, Military of Defence Lot, Freehold, Crown Lease to Financial Secretary Incorporated, Lease Hold, Taxlord Lot (current and old), War Department Lot, and Crown Lease to Colonial Treasury Incorporated.

2.2.3 The lots contained in other layers in the C1000 Library will <u>not</u> be covered in the Lot CSU. For instance, the MODILOT layer contains the boundaries of current and proposed Modifications of Tenancy, Building Licence, Short Term Waiver and Letter of Approval. The LICENCE and OVERLAPLIC layers contain the boundaries of current Short Term Tenancy, Government Licenced Land, Crown Land Licence, Licence Agreement, Tenancy Agreement and Property Management. Since these lots mainly serve short-term lease purposes, PDs are generally not interested on information of this nature. Therefore, under the context of Lot CSU, they would not be included.

2.2.4 In the context of the Lot CSU, since some lot boundaries information were converted from historical paper record without precise surveyed boundaries, the spatial component of a Lot CSU shall represent ***an approximate graphical depiction of the boundary of a piece or parcel of ground, the subject of a Government Lease***.

2.3 Common Rules for Delineation and Shapes of Polygons

2.3.1 The current C1000 specification for delineating the boundaries and shapes of Lot CSU would be retained. The same specification applies to polygons shown on LOT and OVERLAPLOT layers.

2.3.2 The lot boundaries (including those in LOT layer and in OVERLAPLOT layer) in LandsD's C1000 Library are not always precisely defined. This library only stores the approximate graphical boundary data for general identification purpose. This is due to the fact that some of the lot data in the C1000 Library are based on historical land records, some of which some were dated back to 100 years ago. These historical land records were prepared mainly for fiscal purpose. The general shape and location of the lot had been transferred from the historical land records kept in District Survey Offices (DSO). They are not based on modern survey datum and do not have precise grids or coordinates. When required, precise boundaries can only be obtained through proper survey and investigation by professional land surveyors.

2.3.3 Due to the limitations as detailed above, Data Users should note that the spatial extent of the Lot CSU might not always show precise lot boundaries. In some cases, there are topographic features which do not match with the graphical boundaries shown in the C1000 Library.

2.3.4 LandsD confirmed that almost all new lots granted in recent years have coordinate boundaries. For those lots that have been surveyed, the boundaries of them are created by inputting the coordinates of the boundary corners directly from the keyboard or from an existing ASCII datafile.

2.4 Common Attributes

2.4.1 The following common attributes will be maintained in the Lot CSU dataset for the exchange of lot information among PDs:

1.	Lot ID (C1000-format)
2.	Lot ID (LR structural format)
3.	Lot ID (PRN)
4.	Full English lot description
5.	Class Code (Type of Grant)
6.	Site Area
7.	Site Area Units
8.	Ownership Code (for government allocation only)
9.	Condition Type
10.	Condition Number
11.	Use Code (for government allocation only)
12.	Memorial Number

13.	Date of Instrument
14.	Nature Code of Memorial
15.	District Code
16.	Consideration Part Code
17.	Consideration
18.	Nature Description
19.	Lease Effective Date
20.	Lease Term
21.	Renewability
22.	Resumption Notice Date
23.	Resumption Notice No
24.	Actual Reversion Date
25.	Certificate of Compliance Date
26.	Status
27.	Linkage between parent lot and subdivided lot

Table 1 The common data attributes of Lot CSU

2.4.2 Please refer to section 2.5.13 for Data Owner(s) of each common attribute and list of Data Users of the Lot CSU.

2.4.3 One common attribute might have multiple data items. Please refer to section 4 for a detailed description of the data items and data format

2.4.4 Common attributes will be contained in one or more data entities of the agreed data model. Relationship between common attributes and their corresponding data entities is summarised in section 2.6.4.

2.5 CSU ID

2.5.1 A lot's identity reference is uniquely designated with a textual string on legal documents like deeds.

2.5.2 Identity references to newly defined lots, e.g. through a land grant, are designated by the LandsD. The designation of a whole lot, which is unique and persistent, is comprised of two components, namely Lot Type (including the DD/SD number, if any) and Lot Number (alphanumeric, though the majority are numbers). E.g. Inland Lot 123 (or abbreviated as IL 123), Demarcation District 5 Lot 1 (or abbreviated as DD 5 Lot 1).

2.5.3 Designations of subdivided lots, which are based on the designation of the parent lot being subdivided, are assigned by the authorized land surveyor appointed by the lot owner. There has been an adopted standard since 1999 about the designation of subdivided lots - the Code of Practice of the Land Survey Ordinance (Second Edition):

(a) When a lot is subdivided for the first time, the subdivided portions are called "Sections" which shall be designated with letters in alphabetical order successively as Section A, Section B, Section C etc. except for the last section which shall be designated as the Remaining Portion of the original lot.

(b) In a subsequent subdivision of a section, the subdivided portions are called "Subsections" which shall be designated with numbers successively as Subsection 1, Subsection 2, Subsection 3 etc. except for the last subsection which shall be designated as the Remaining Portion of the original section.

(c) On further subdivisions of a section or a subsection into the next tiers, the key to the designations is that a section is followed by a subsection which in turn followed by a section, ad infinitum. The last portions shall always be designated as the Remaining Portion of the original section/subsection. Sections are labeled by using letters and subsections are labeled by using numbers.

(d) The detailed rules of designation are defined in the Code of Practice, which is accessible from LandsD's Web site.

(e) After all, designation of the lots subdivided before enactment of this Code of Practice might not conform to this standard.

2.5.4 Since the textual lot designation is an official identifier widely used by government departments and the public, the Lot CSU ID will follow similar adopted standard base on the lot designation.

2.5.5 To facilitate efficient search on lot-related information and to meet the business need of individual departments, BD, LandsD, RVD and LR also maintain their own set of lot identifiers in their own conventions. These conventions vary by departments, but basically the textual lot designations are split and stored into individual fields according to the rules set by the individual department. BD, RVD and LR have individual fields to store lot type, lot number, sections, subsections and extensions; whereas LandsD uses comma delimited format to handle virtually unlimited number of sections/subsections, R.P. and extensions in one single field.

2.5.6 To facilitate lot data exchange among PDs and to take into considerations the different conventions of lot identifiers adopted by these departments, the Lot CSU shall maintain the following lot designations in the dataset:

(a) LandsD's structural format as being used in the L1000R/C1000 library (LandsD C1000-format);

(b) LR's structural format as being used in LRS and to be used as part of address identifier in IRIS (LR structural format);

(c) LR's Property Reference Number (PRN) to be adopted in IRIS; and

(d) the full English lot description.

2.5.7 To identify a specific Lot CSU, the first three formats above are preferred to the last one, i.e. it is more preferable to choose either LandsD C1000-format, LR structural format or PRN as Lot CSU ID as the identifier for data exchange purpose and for mapping of the departmental ID with the CSU ID. Though the full English description could also be used as an identifier, PDs should use this with caution since free-text value could have potential risk of string-matching problems such as capital vs small letters, extra spaces and etc. Hence, the full English lot description is preferably used only as a reference instead of a unique identifier.

2.5.8 As LandsD's and LR's lot identifiers are usually appended to a given Lot CSU at different time during the production cycle of the Lot CSU, the respective Data Owners would be responsible to ensure the uniqueness and persistence in the assignment and maintenance of the identifiers to the appropriate format(s) under their jurisdiction. Detailed description of production cycle of a new CSU is available in section 3 of this document.

2.5.9 LandsD C1000-format

(a) There are four components in this format, namely Lot Type Code, Lot Number (Numeric), Lot Number (Alpha) and Section Code. The Lot Type Code and Lot Number (Numeric) components are mandatory.

(b) Lot Type Code - The first component is a numeric code defined in a lookup table to identify the Lot Type part in the lot designation, e.g. 320 stands for DD 1 CC.

(c) Lot Number (Numeric) - The second component is the numeric part of the Lot Number in the lot designation, e.g. 197.

(d) Lot Number (Alpha) - The third component is the alphabetical part of the Lot Number in the lot designation. The majority of lots may have the numeric part only and this component is left as null.

(e) Section Code - The last component is the section/subsection/extension codes delimited by commas (without space after) to define the level of section and subsection. The wordings "Section" and "Subsection" in the lot designation will be omitted. E.g. 'RP,G,2,RP,&EXT' stands for "The Remaining Portion of Subsection 2 of Section G of the Remaining Portion and the Extension Thereto".

(f) For example, the ID ('320', '197', Null, 'B,4,RP') in the following map identifies the lot "Remaining Portion of Subsection 4 of Section B of DD 1 CC 197". Please refer to Appendix A for more sample values of the Section Code component.

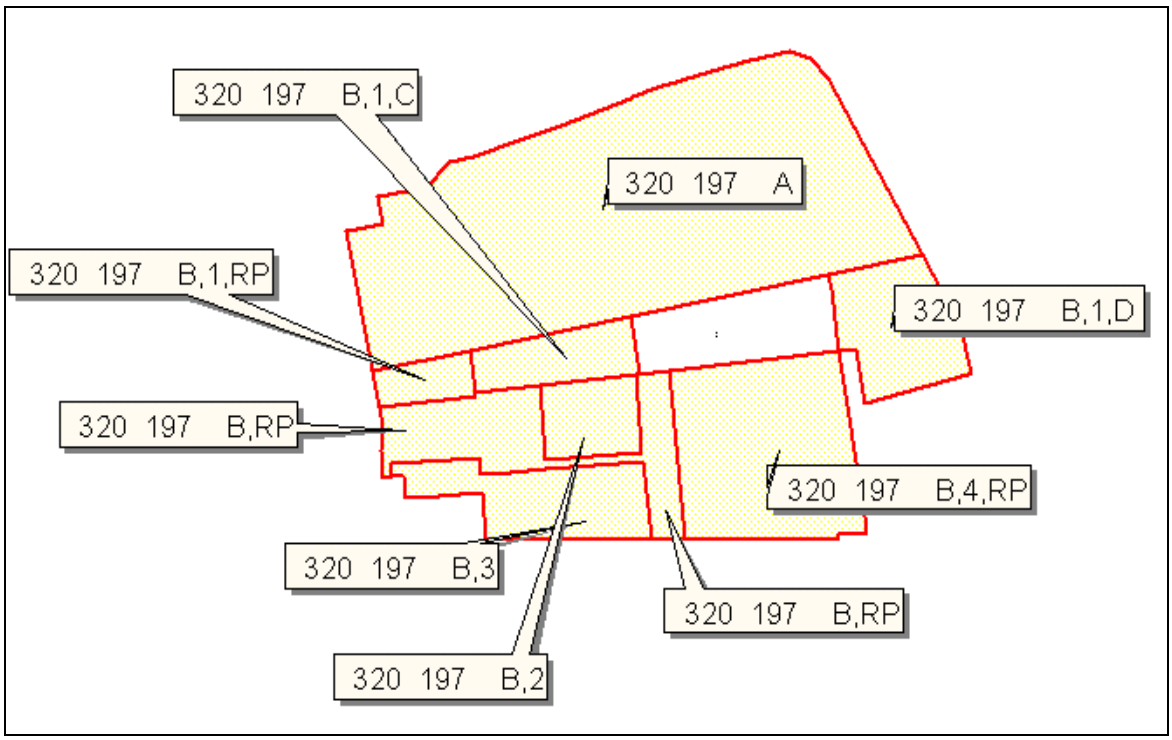


Figure 1 Lot CSU ID - LandsD C1000-format

2.5.10 LR structural format

(a) There are eleven components in this format, namely Lot Type, Lot Number, Section 1, Subsection 1, Section 2, Subsection 2, Section 3, Subsection 3, Section 4, Extension and Miscellaneous Item. The Lot Type and Lot Number components are mandatory.

(b) Lot Type - The first component is an alphanumeric code defined in a lookup table to identify the DD/SD/town Lot Type part in a lot designation, e.g. 'SL' stands for SHAUKIWAN LOT, 'DD360L' stands for DD 360 LOT.

(c) Lot Number - The second component is Lot Number part (both numeric and alphabetical parts) in a lot designation, e.g. '197', '197A'.

(d) Section 1 - This is the first section letter/number (e.g. 'A' for SECTION A, 'B' for SECTION B) appeared in a lot designation. The following four special values are supported while all other values are regarded as section letters/numbers:

(i) '(PE)' = PRAYA EXTENSION TO

(ii) '(PR)' = PRAYA EXCLAMATION TO

(iii) '(RP)' = THE REMAINING PORTION OF

(iv) '(RC)' = THE RECLAMATION TO

(e) Subsection 1 - This is the first subsection number/letter (e.g. '1' for SUBSECTION 1, '2' for SUBSECTION 2) appeared in a lot designation.

(f) Section 2 - This is the second section letter/number (e.g. 'A' for SECTION A, 'B' for SECTION B) appeared in a lot designation. In addition to normal section letters/numbers, the four special values as in the Section 1 component are also supported.

(g) Subsection 2 - This is the second subsection number/letter (e.g. '1' for SUBSECTION 1, '2' for SUBSECTION 2) appeared in a lot designation.

(h) Section 3 - This is the third section letter/number (e.g. 'A' for SECTION A, 'B' for SECTION B) appeared in a lot designation. In addition to normal section letters/numbers, the four special values as in the Section 1 component are also supported.

(i) Subsection 3 - This is the third subsection number/letter (e.g. '1' for SUBSECTION 1, '2' for SUBSECTION 2) appeared in a lot designation.

(j) Section 4 - This is the forth section letter/number (e.g. 'A' for SECTION A, 'B' for SECTION B) appeared in a lot designation. In addition to normal section letters/numbers, the four special values as in the Section 1 component are also supported.

(k) Extension - This component has the value '(EX)' when a lot designation ends with "AND THE EXTENSION THERETO"; this component is left null otherwise.

(l) Miscellaneous Item - This component is filled in only for those peculiar lots in LR's LRS (and future IRIS) - a peculiar lot is that the registered textual lot designation is not in standard form such that it cannot be automatically generated by LRS/IRIS using the decomposed values in the former 10 components. When this data item is not null (an LR's internal reference number, normally equal to or greater than 9100), only the Lot Type and Lot Number components will be filled in while the seven Section/Subsection components as well as the Extension component will be left as null. Data Users must refer to the full English lot description to get the complete lot designation information.

(m) For whole lots (i.e. not subdivided), the lot identifier will have the Lot Type and Lot Number components only and the other components will be left as null.

(n) For subdivided lots, the part of lot designation inherited from the parent whole lots (i.e. Lot Type and Lot Number components) will be entered in the same way as the parent whole lots. The Section/Subsections part will then be entered into the Section 1 to 4 and Subsection 1 to 3 components. The first section appears in the lot designation will be entered as Section 1, the first subsection appears in the lot designation will be entered as Subsection 1, the second section appears in the lot designation will be entered as Section 2, so and so forth. The wordings "Section" and "Subsection" in the lot designation will be omitted when decomposing into the said components, e.g. 'Section A' will be recorded as 'A', 'Subsection 1' will be recorded as '1'. Lots with more than seven levels of sections/subsections will be recorded as peculiar lots.

(o) For example, the ID ('IL', '94', '(RP)', Null, 'G', '2', '(RP)', Null, Null, '(EX)', Null) identifies the lot "The Remaining Portion of Subsection 2 of Section G of the Remaining Portion of Inland Lot 94 and the Extension Thereto". Please refer to Appendix B for more sample values.

2.5.11 PRN

(a) This is a format which will be adopted in LR's IRIS to uniquely identify a lot register or a subdivision register.

(b) A PRN has 8 alphanumeric characters. The first character is the sequence group (1-alphabet to denote the sequence group, i.e.: A..Z, except I and O, totally 24 sequence groups). It is then followed by a 6-digit sequence number, and the last character is a check digit.

2.5.12 Full English lot description

(a) This is a format used for describing the textual lot designation in English. E.g. 'INLAND LOT 123', 'DD 5 LOT 1'.

2.5.13 A lot in general refers to the subject of a Government Lease. It is currently identified by a textual designation described in 2.5.2 and 2.5.3 and such identifier is a key reference in the corresponding land document. As was explained in earlier section, the first three formats are preferred to the last one, i.e. it is more preferable to choose either LandsD C1000-format, LR structural format or PRN as Lot CSU ID for data exchange purpose and also for mapping of the department ID with the CSU ID. Either one of these formats shall uniquely and persistently give the textual designation of a lot. For the "RP" portion of a subject Lot CSU, there might be changes to the lease conditions or boundaries, e.g. subdivision of the

subject lot, the latest updated "RP" portion will carry the same designation and inherit properties from its parent lot.

2.5.14 For example, the lot "Remaining Potion of Inland Lot 123" will have C1000-format Lot ID as ('5490', '123', Null, 'RP'). After further subdivision into "Section B of Inland Lot 123" and a smaller "Remaining Portion of Inland Lot 123", the former will be represented by a new Lot CSU record having C1000-format Lot ID as ('5490', '123', Null, 'B'), and the latter one will consistently correspond to the unchanged lot designation and hence inherit the Lot CSU record of C1000-format Lot ID as ('5490', '123', Null, 'RP'). The modified "Remaining Portion of Inland Lot 123" inherits all the existing information before carving-out, such as memorials registered under this lot designation, and will be updated with latest information such as new boundaries and new lease conditions.

2.5.15 A Lot CSU may contain multiple non-overlapping pieces of land (or known as "sites"), though the majority have only one site for each Lot CSU. Any one of the above three formats of CSU ID covers all composing sites of the Lot CSU, instead of referring to only one particular composing site.

2.5.16 As an example, a PRN maps to one C1000 Lot ID. The C1000 Lot ID in turn may map to multiple land parcels. Therefore, a unique PRN would identify all related pieces of disjointed parcels.

2.6 Data Custodianship

2.6.1 Please refer to Volume 2I – Data Custodianship and License Agreement, for the details about defined roles and responsibilities for the Data Agent, Data Owner and Data User.

Data Agent

2.6.2 LandsD will be the Data Agent for Lot CSU.

Data Owner

2.6.3 Data ownership of the Lot CSU information is assigned by attribute.

2.6.4 List of common attributes, corresponding Data Owners, as well as the entities storing the common attributes are summarized below:

Common Attribute	Data Owner	Entity
1. Lot ID (C1000-format)	LandsD[1]	Land Info, Lot Register
2. Lot ID (LR structural format)	LR	Lot Register
3. Lot ID (PRN)	LR[1]	Land Info, Lot Register
4. Full English lot description	LR	Lot Register
5. Class Code (Type of Grant)	LandsD	Land Info
6. Site Area	LandsD	Land Info
7. Site Area Units	LandsD	Land Info
8. Ownership Code (for government allocation only)	LandsD	Land Info
9. Condition Type	LandsD	Land Info
10. Condition Number	LandsD	Land Info
11. Use Code (for government allocation only)	LandsD	Land Info
12. Memorial Number	LR	Memorial
13. Date of Instrument	LR	Memorial
14. Nature Code of Memorial	LR	Memorial
15. District Code	LR	Lot Register
16. Consideration Part Code	LR	Memorial
17. Consideration	LR	Memorial
18. Nature Description	LR	Memorial
19. Lease Effective Date	LandsD	Land Info
20. Lease Term	LandsD	Land Info
21. Renewability	LandsD	Land Info
22. Resumption Notice Date	LandsD	Resumption Notice
23. Resumption Notice No	LandsD	Resumption Notice
24. Actual Reversion Date	LandsD	Resumption Notice
25. Certificate of Compliance Date	LandsD	Cert of Compliance Date
26. Status	LandsD	Land Info
27. Linkage between parent lot and subdivided lot	LR	Subdivision

Table 2 Ownership of common attributes

[1] LandsD and LR are responsible for assigning unique and persistent C1000-format and PRN Lot ID respectively for each new CSU record. They are also responsible for providing a one-one matching between these two formats of Lot ID, where data provision responsibility is assigned according to the lifecycle of a Lot CSU record as described in section 3. For more information please refer to descriptions of the C1000 Lot ID and PRN data items in both Land Info and Lot Register entities, which are defined in section 4.5.3 and 4.5.16 respectively.

2.6.5 Entities, solely or partially, owned by each Data Owner are summarised below:

PD	**Entity**	**Ownership[2]**
LandsD	Land Info	T
	Cert of Compliance Date	T
	Resumption Notice	T
	Land Resumption Notice	T
	Lot Type Name	T
	Lot Type District	T
	Land Classification	T
	Area Unit	T
	Land Ownership	T
	Lease Condition Type	T
	Lease Use	T
	Lot Polygon	T
	Overlap Lot Polygon	T
LR	Lot Register	T
	Lot Register Lot Type	T
	Lot Register Area	T
	Memorial	T
	Lot Register Memorial	T
	Memorial Nature	T
	Subdivision	T

Table 3 Entities owned by PDs

2.6.6 Please refer to section 4.5 for the data items corresponding to the common attributes and the detailed ownership assignment for each data item in each entity.

[2] Mode of Ownership: T - the PD owns the entire entity; R - the PD owns all data items of particular records in the entity; F - the PD owns only particular data item(s) of particular record(s) in the entity.

Data User

2.6.7 The following PDs will be Data Users of the Lot CSU: BD, CED, DSD, LandsD, PlanD and RVD.

3 CSU Workflow

3.1 Overview

3.1.1 The flow charts below are used to describe the data exchange processes among the PDs in the context of Lot CSU. Hence, only those processes that directly related to update or retrieval on CSU data are indicated. Internal processes within a PD, and data exchange processes between a PD and other organization (e.g. developers, government departments other than the PDs) are not included.

3.1.2 The proposed workflow process will cover the data exchange in the following four stages:

(a) Creation/Regrant;

(b) Land Transaction Registration;

(c) Subdivision; and

(d) Surrender/Resumption.

3.1.3 It is a prime objective to build up a one-one mapping table between LandsD's Lot No. (the LandsD C1000-format Lot ID) and LR's Lot No. (the PRN format Lot ID to be used in IRIS and the structural format Lot ID currently used in LRS). Only those existing lots under the Lot CSU scope will be processed, but obsolete Lot No. will not be mapped.

3.2 Data Exchange Processes

3.2.1 The proposed workflow is illustrated by the charts below:

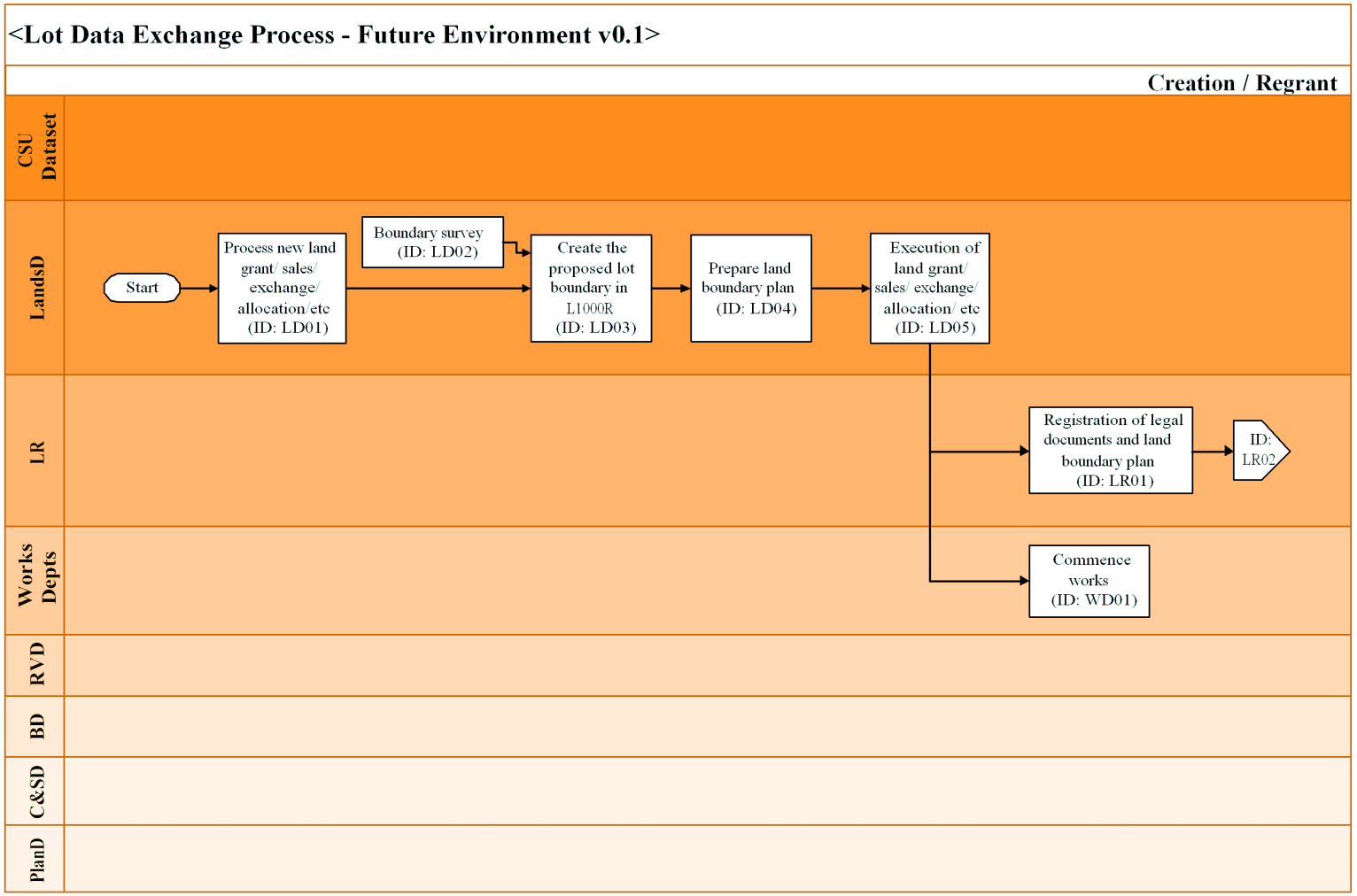


Figure 2 Workflow of Lot CSU – Creation/Regrant (1)

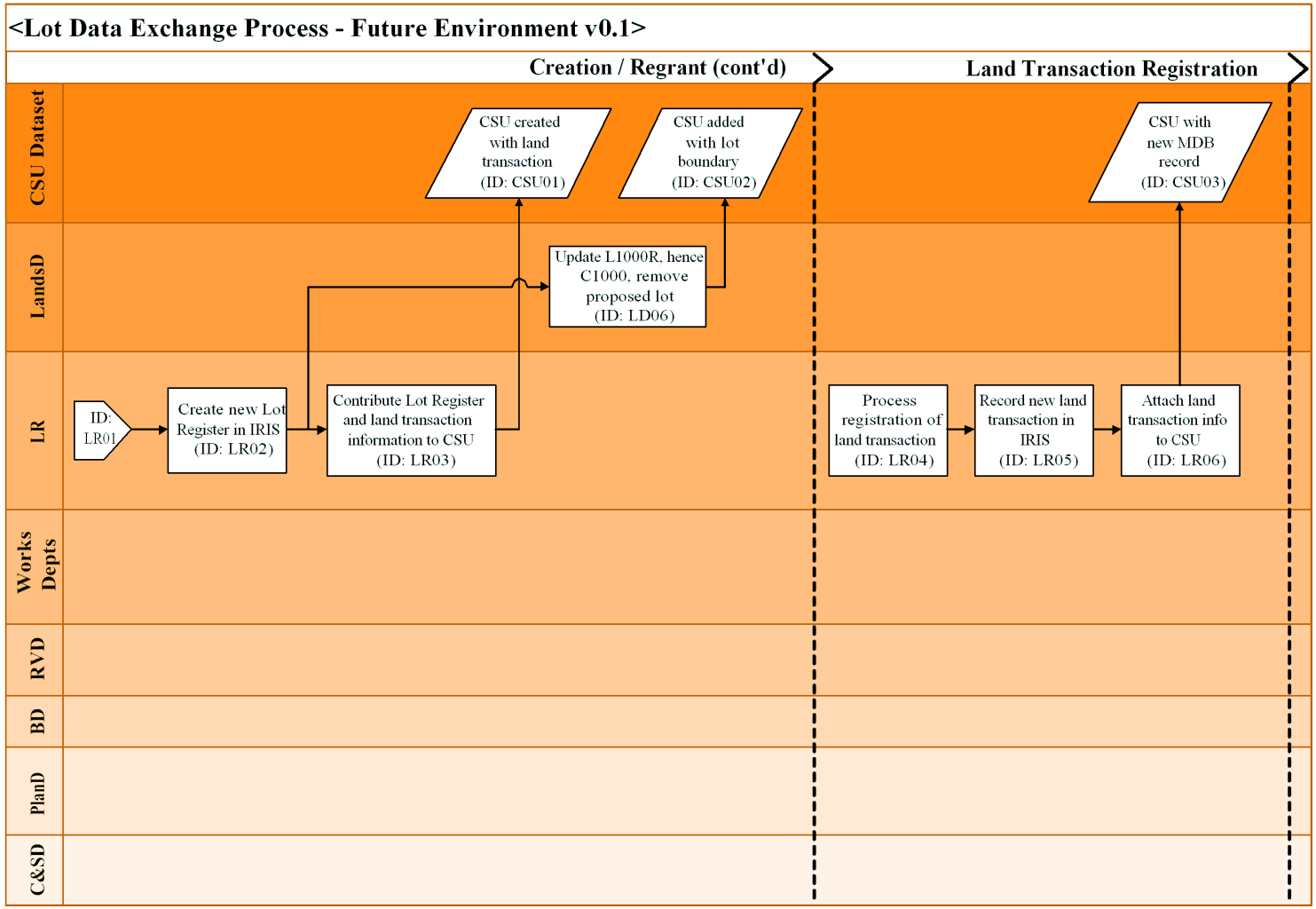


Figure 3 Workflow of Lot CSU – Creation/Regrant (2) and Land Transaction Registration

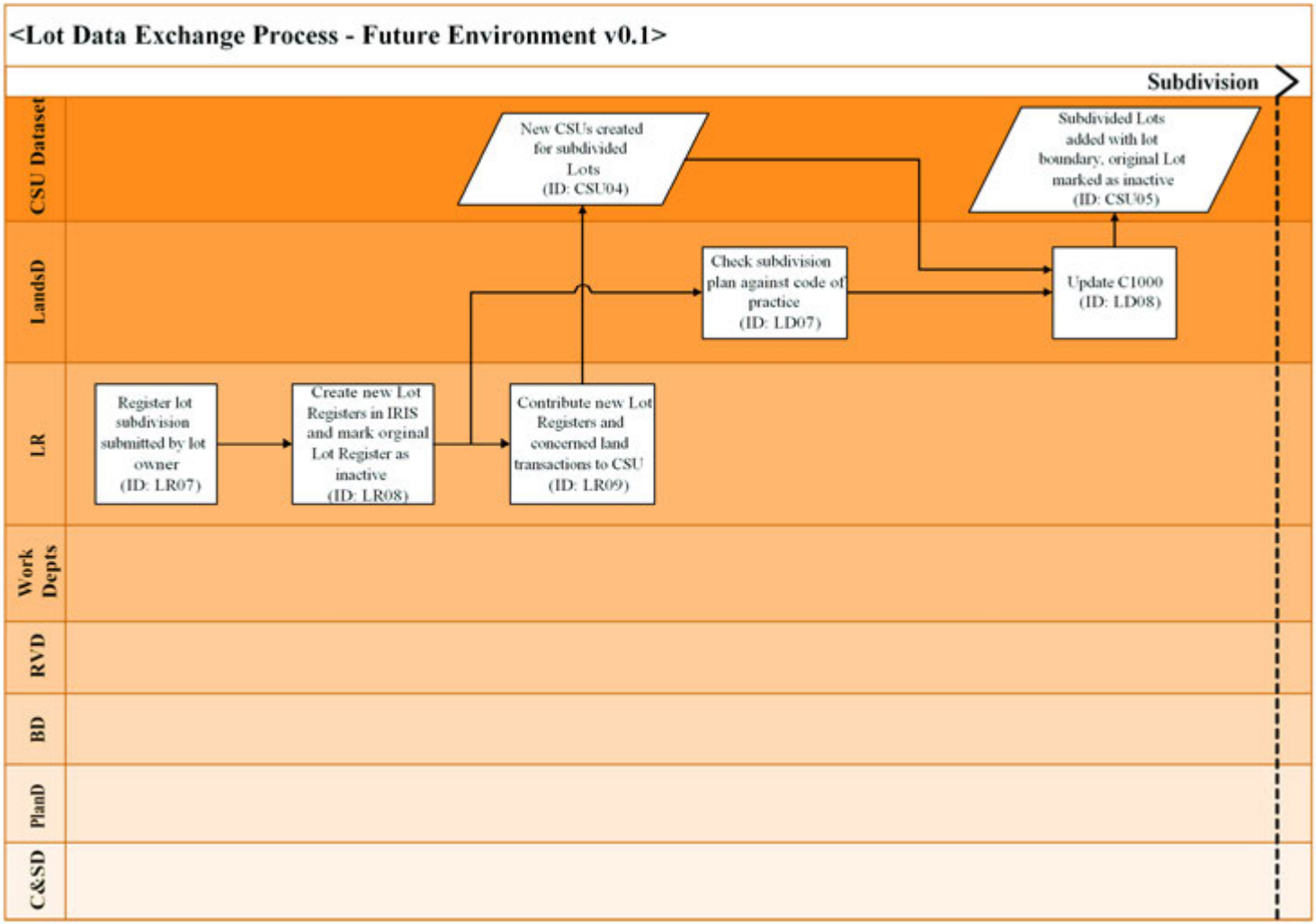


Figure 4 Workflow of Lot CSU – Subdivision

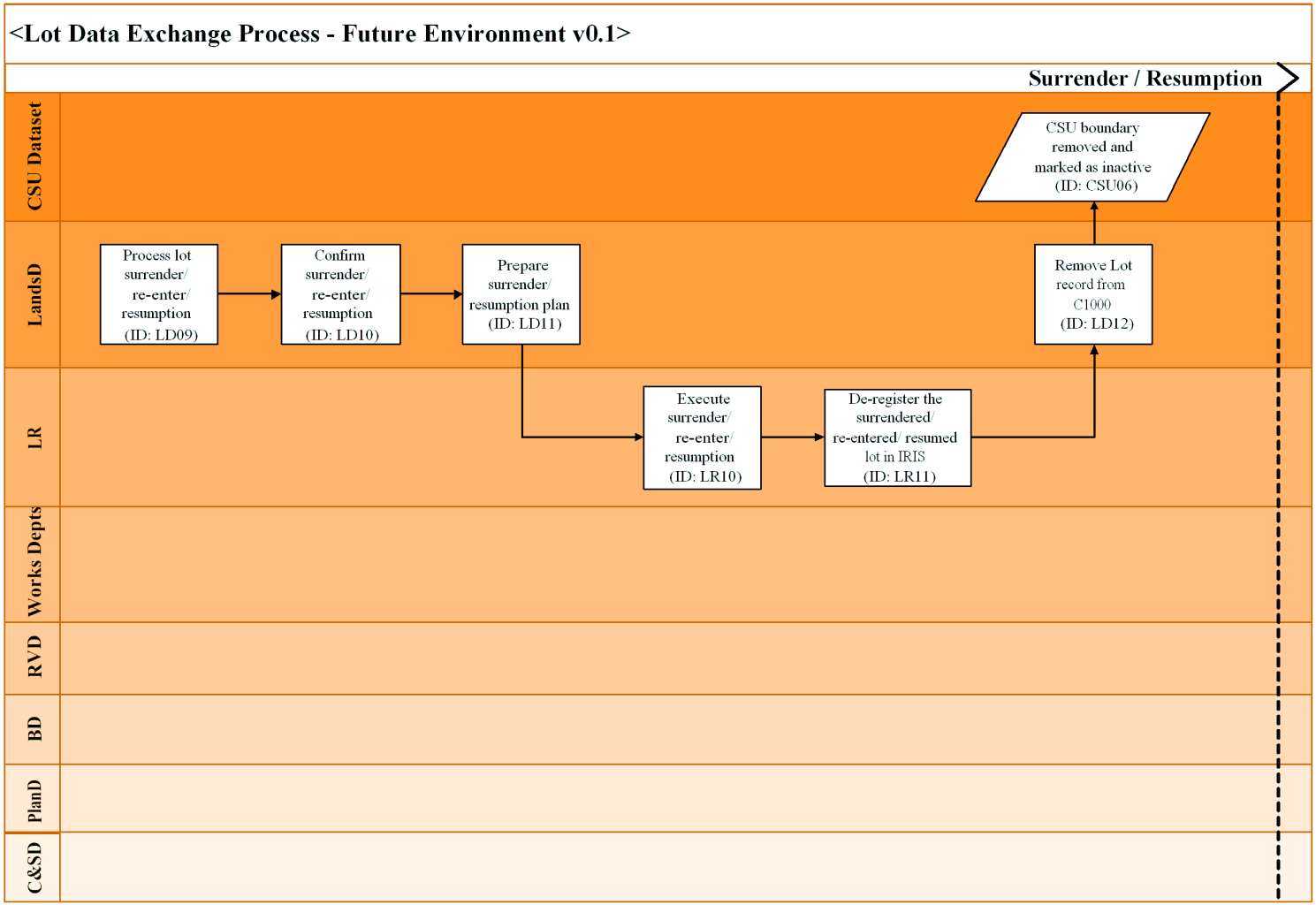


Figure 5 Workflow of Lot CSU – Surrender/Resumption

3.2.2 Creation/Regrant

(a) LandsD creates a lot record in L1000R and prepares the land boundary plan during processing land grant/ sales/ exchange/ allocation etc. Lot ID to LandsD's existing format (as mentioned in section 2.5.9) will be captured into L1000R and printed on the lot boundary plan also. *(LD03-04)*

(b) The new lot information will not be released to other as the proposed lot information is still classified as restricted information prior to completion of executing the land grant/ sales/ exchange/ allocation.

(c) LandsD requests for registration of a new lot by LR. *(LD05)*

(d) When registering this new lot into Lot Register, LR captures the following lot designations into IRIS (pending on completion of IRIS enhancement): *(LR02)*

(i) PRN (system assigned);

(ii) The Lot ID to existing LRS structural format (i.e. the future IRIS address identifier format) as mentioned in section 2.5.10;

(iii) The Lot ID to LandsD's L1000R/C1000 format as mentioned in section 2.5.9, which can be found from the lot boundary plan printout; and

(iv) The full lot description as printed on the land grant/ sales/ exchange/ allocation document.

(e) LR contributes the new Lot Register information and also the relevant land transaction (MDB record) record to the Lot CSU. The Lot Register information will include lot designation to the above four formats which will be captured into IRIS (PRN, LR structural format, LandsD C1000-format and full English lot description). Regarding MDB records, only those related to lot registers are included, while those related to sub-division registers (SDR) are outside the scope of the Lot CSU. *(LR03)*

(f) The data from LR will be appended to the Lot CSU dataset, but the Data Agent will not include this lot information in the Lot CSU update since the lot boundary of the lot is yet available. *(CSU01)*

(g) In parallel with the above process, LR will notify LandsD by memo on completion of registration of new lot. To improve the post processing, LR will implement the following changes:

(i) Include the PRN of the newly registered lot on the memo for easy reference by LandsD.

(ii) Send two copies of memo to LandsD: one copy for LAO and the other copy for SMO of LandsD. SMO will then update L1000R, hence C1000, by moving the lot record to the active layer and contributing LandsD's data to the Lot CSU dataset. The lot boundaries information contributed by LandsD are designated with a Lot ID to C1000-format. *(LD06)*

(h) The lot boundary and land transaction information in the CSU dataset contributed by LandsD and LR respectively are now linked up automatically through the C1000-format Lot ID. The link between the Land Info record and the Lot Register record for the new lot is available in the Lot Register record contributed by LR in step (e) above. Upon importing these data into the CSU dataset, the Data Agent will also copy the link (i.e. the paired-up C1000 Lot ID and PRN) from the Lot Register record to the PRN data item of the associated Land Info record. *(CSU02)*

3.2.3 Land Transaction Registration

(a) On completion of registration of a new transaction on a Lot Register (but not an SDR) record, LR contributes the information to the Lot CSU, referenced by the PRN of the corresponding Lot Register. *(LR06)*

(b) The new land transaction information is linked up with the corresponding Lot CSU automatically through the PRN-format Lot ID. *(CSU03)*

3.2.4 Subdivision

(a) LR processes registration of carving-out plan submitted by the lot owner. IRIS is updated to create new Lot Register records for the sub-divided lots, and the original Lot Register is appended with closure remarks in IRIS. LR would enhance IRIS, subject to confirmation of implementation schedule, to maintain relational links between the parent Lot Register and the subdivided Lot Registers in IRIS. *(LR08)*

(b) LR appends the information to the new Lot Registers records, as well as the carving-out land transaction information (MDB record) to the Memorial records and Lot Register Memorial records. The links between the parent lot and the subdivided lot through the respective PRNs are also included in Subdivision records of the Lot CSU dataset. Information to the new Lot Registers records include PRN, LR structural format and full English lot description. *(LR09)* That is, LR will contribute the following data to the Lot CSU dataset: (please refer to section 4.5 for detailed descriptions of these records such as field data type, field length and field description)

(i) Lot Register record, one for each subdivided lot - all data items except C1000 Lot ID

(ii) Memorial record regarding the registration of subdivision - all data items

(iii) Lot Register Memorial record(s) to link up the concerned Lot Register and Memorial records - all data items

(iv) Subdivision records to link up the parent lot and all subdivided lots - all data items

(c) At this stage, new Lot CSUs for the sub-divided lots are created but without C1000-format Lot ID yet. *(CSU04)*

(d) Authorized land surveyor (ALS), who is appointed by the subject lot owner, needs to submit the registered sub-division plan to LandsD for checking. *(LD07)*

(e) If checking is satisfactory, LandsD will update C1000 to replace the original lot by subdivided lots. In addition to the Lot ID to C1000-format, LandsD also enters the corresponding PRNs into their system. LandsD can search for the PRNs of the new subdivided lots through the parent lot from the linkage information provided by LR described in (b). *(LD08)*

(f) LandsD contributes the new lot boundaries to Lot CSU, which are designated by Lot IDs in both C1000-format and PRN-format. That is, LandsD will contribute the following data to the CSU dataset: (please refer to section 4.5 for detailed descriptions of these records such as field data type, field length and field description)

(i) Update the Status data item of the Land Info record for the parent lot

(ii) Add a new Land Info record for each subdivided lot (all data items filled in)

(iii) Add a new Lot Polygon/Overlap Lot Polygon record for each subdivided lot (all data items filled in)

(iv) Delete the Lot Polygon/Overlap Lot Polygon record of the original parent lot

(g) The new lot boundaries in the Lot CSU dataset are linked up with the Lot Register records and land transaction information from LR automatically through the PRN-format Lot ID. The link between the Land Info record and the Lot Register record for each subdivided lot is available in the

Land Info record contributed by LandsD in step (f) above. Upon importing these data into the Lot CSU dataset, the Data Agent will also copy the link (i.e. the paired-up C1000 Lot ID and PRN) from the Land Info record to the C1000 Lot ID data item of the associated Lot Register record. On the other hand, the original Lot CSU for the parent lot is marked as inactive. *(CSU05)*

3.2.5 Surrender/Resumption

(a) For the normal resumption cases, LAO will arrange to gazette the relevant Government Notice for resumption before the land reverts to the Government. A memo together with the said Government Notice for resumption will simultaneously be sent to LR for registration and LR will also be informed of the exact date when the land will be reverted to Government, i.e. the date of reversion. Therefore, for the resumption cases, LR should only de-activate the subject Lot from the Lot Register records as from the date of reversion *(LR11)*.

(b) LandsD then removes the lot boundary of the resumed Lot from the C1000 Library and mark the lot record as inactive. These changes, i.e. removal of lot boundary and change in status, are then appended to Land Info records of the Lot CSU. *(LD12)*

(c) The subject Lot CSU Status is changed to Inactive in the CSU dataset and its boundary polygon is removed from the active layer (i.e. the concerned Lot Polygon/Overlap Lot Polygon record is removed). *(CSU07)*

4 CSU Data Interface Requirement

4.1 Overview

4.1.1 A logical model for CSU data exchange is defined for PDs' exchange of the Lot CSU. The model describes the logical structure of CSU data exchanged between the interfacing systems of PDs. PDs, either as Data Owners or Data Users, are not required to adopt the same logical data structure in their own departmental systems. However, each PD is recommended to maintain a mapping between the Common Spatial Units and their departmental records in their respective core departmental systems(s) such that:-

(a) Data Owner can extract data from their departmental system according to the definition of CSU; and

(b) Data User can import CSU data into their departmental system for further processing/ analysis.

4.1.2 Mapping of the unique CSU ID with the departmental ID may be a one-to-one, one-to-many or many-to-one relation (but a many-to-many relation is not recommended) depending on the data definition of PDs' polygons represented by their departmental ID.

4.1.3 The following sections provide details for the logical model in terms of :-

(a) CSU status – possible statuses of a CSU;

(b) Themes - thematic layers; and

(c) Logical data structure, including a detailed description of the data items and assignment of ownership.

4.2 CSU Status

4.2.1 There are two possible statuses for a Lot CSU:

(a) Active - The lot is registered in LR and its lot boundary is available in the CSU dataset.

(b) Inactive - The lot is surrendered/resumed/subdivided and its lot boundary has been removed from the CSU dataset.

4.3 Themes

4.3.1 Lot boundary polygons are available only for active lots (i.e. CSU Status = Active).

4.3.2 The active lot boundary polygons will be organized in two layers upon dissemination:

(a) LOT - The graphic features are created by digitising both the whole lot and section lot boundaries from the 1:1000 scale Permanent Land Record Plan. If the lot has been surveyed, the boundaries of such lot are created by inputting the coordinates of the boundary corners directly from the keyboard or from an existing ASCII data file.

(b) OVERLAPLOT - It stores those lot boundaries that are overlapping with other neighbouring lots.

4.3.3 The above layers contain only closed polygon features. The polygons are two-dimensional shapes that represent geographic features stored as a series of segments that encloses an area. No overlapping polygon is allowed in one layer.

4.3.4 In addition to simple polygon type, the above layers should also support multi-polygons and donut polygons to represent various situations in real world.

4.3.5 For each individual polygon, it should not be split even if the polygon lies along the tile border of 1:1000 survey sheets.

4.3.6 The full set of polygons should be maintained in a seamless manner, that is, the split polygons locating along the tile borders have to be merged, and the border lines have to be dissolved, thereby, other PDs' post processing effort on merging the polygons can be minimized. Also, this can facilitate the spatial query and filtering operation.

4.3.7 The polygon layers should be confined within HK 1980 Grid Coordinate System, that is, the minimum and maximum spatial extents are 800000, 800000 and 867500, 848000 respectively.

4.4 Logical Data Structure

4.4.1 Please refer to Appendix C for conventions used in the following parts of this section.

4.4.2 The logical relationships among entities are illustrated below.

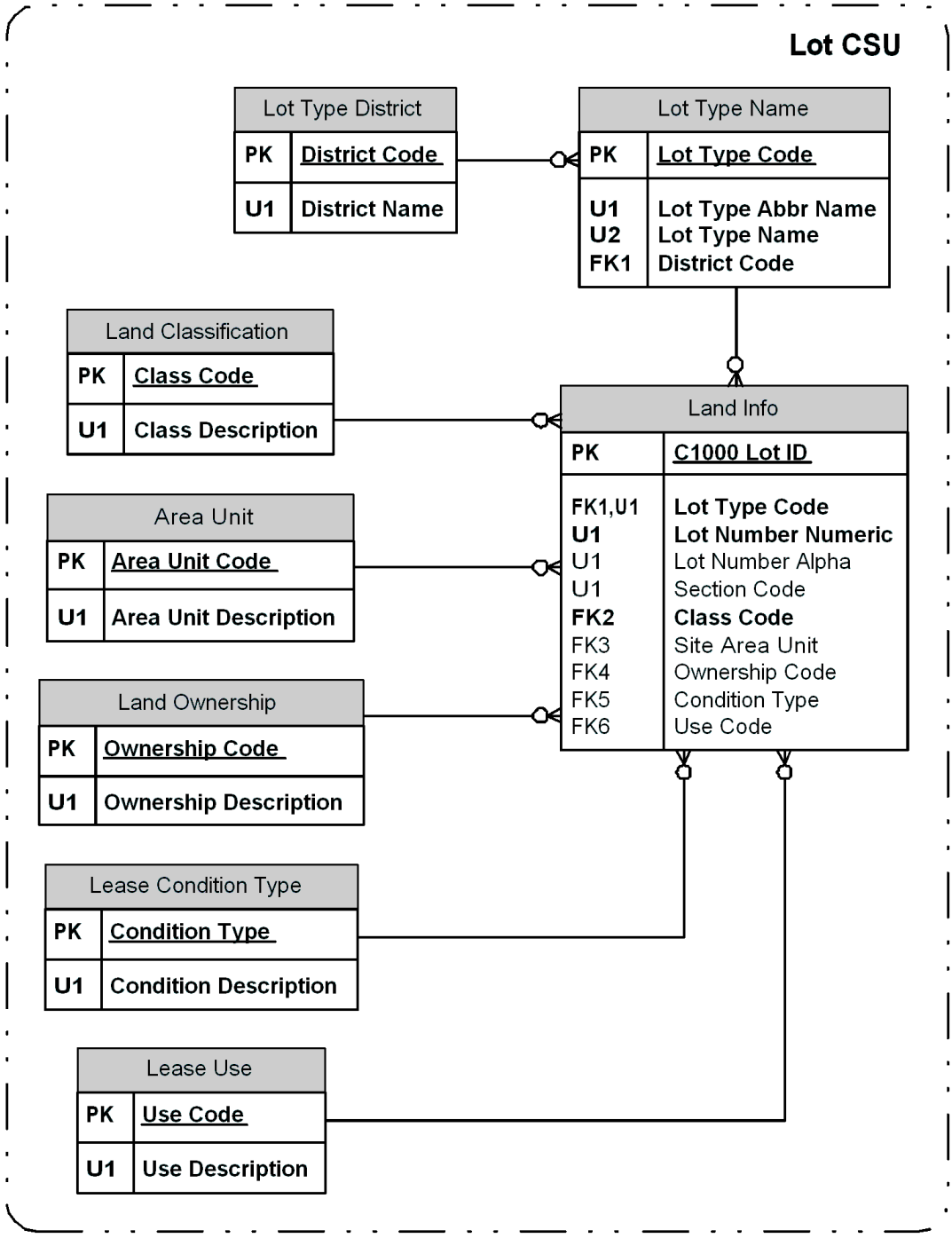


Figure 6 LDS for the Lot CSU (1)

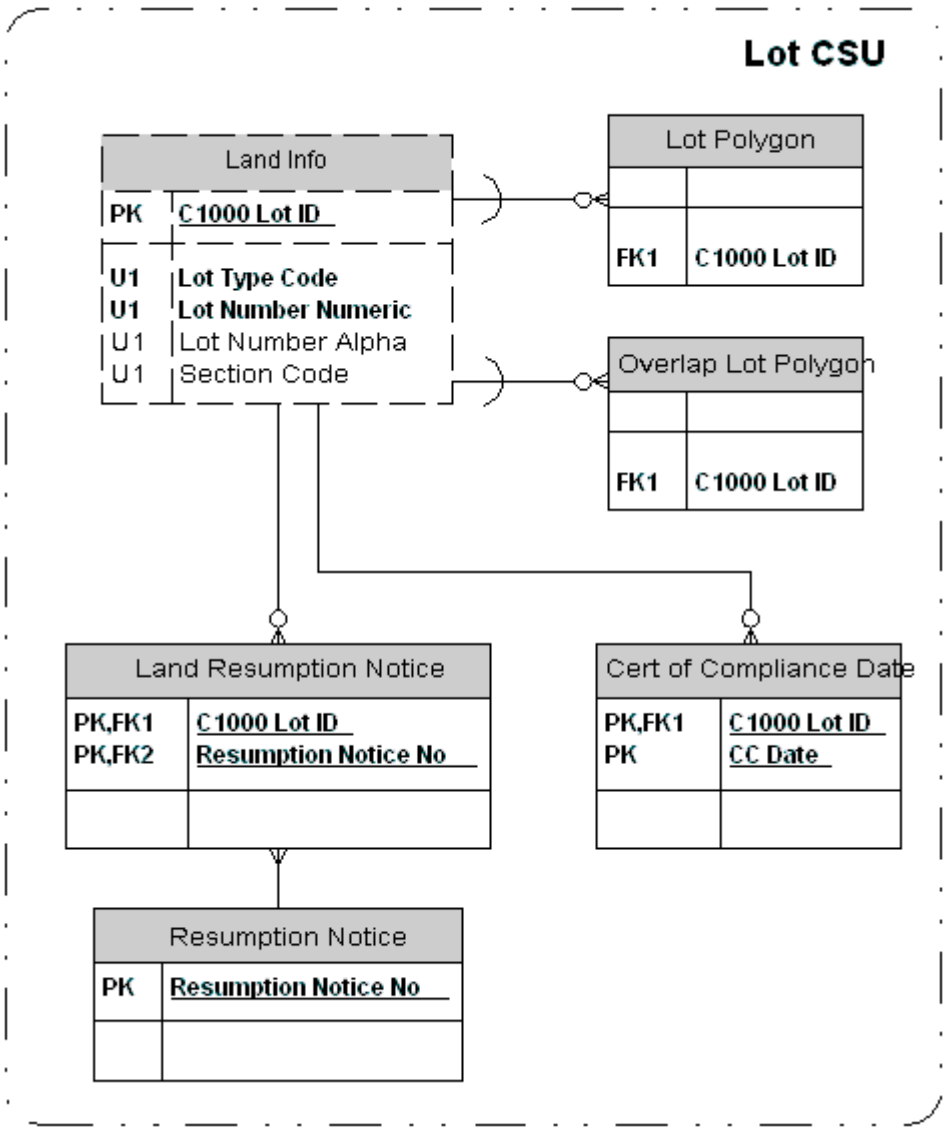


Figure 7 LDS for the Lot CSU (2)

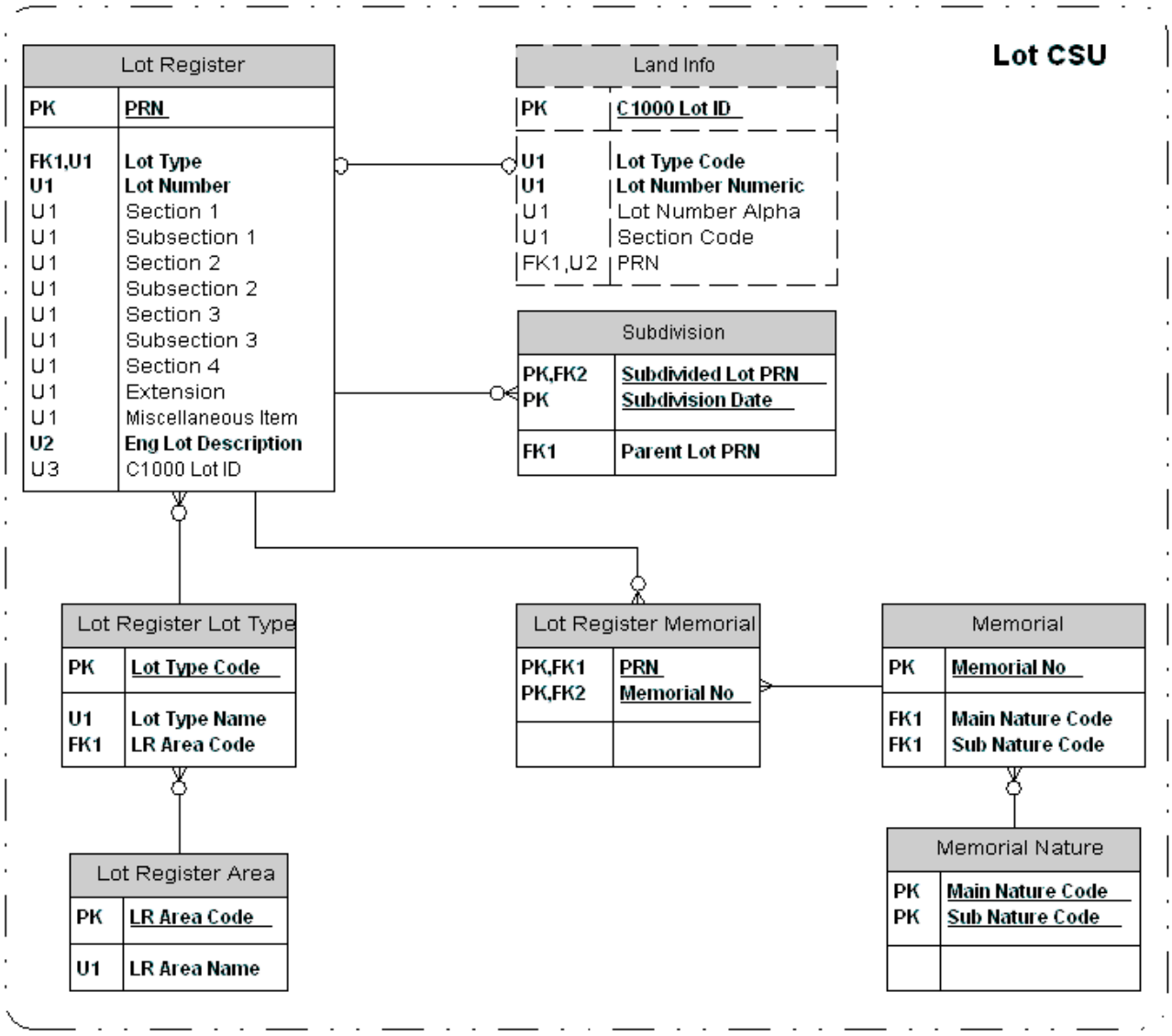


Figure 8 LDS for the Lot CSU (3)

4.4.3 As summarized in section 2.6.4, the common attribute data provided by LandsD are maintained in the Land Info, Cert of Compliance Date and Resumption Notice entities; the ones from LR are maintained in Lot Register, Memorial and Subdivision entities.

4.4.4 For new lots created after implementation of DAM, LandsD will provide lot information (lot boundaries and textual attributes) only after the lots are registered in LR. Hence, a Lot Register record will be created before its Land Info counterpart for a Lot CSU.

4.4.5 For lots created before implementation of DAM, Land Info records and Lot Register records will be converted from existing records in LandsD's C1000 Library and LR's IRIS respectively. To mitigate the high demand of manual

conversion effort before DAM implementation, the links between the two may not be built up for each converted Lot CSUs before implementation of DAM.

4.4.6 Due to time lag before completion of the matching process, both ends of the link between Land Info and Lot Register entities are indicated as optional in Figure 8 above. However, once the link is built up, a 1-1 mapping between the two should be maintained for the rest of the lifetime of the CSU. A link can be broken only upon exceptional cases, such as to rectify a wrong matching, and warnings should be given to the Data Owners.

4.4.7 In each subdivision process, one and only one lot (the "parent lot") may be subdivided into multiple smaller pieces (the "subdivided lots"). Normally a lot in a subdivision process can be the parent lot for at most once in its whole lifetime (the parent lot is superseded by its subdivided lots after carving-out); and similarly a lot in a subdivision process can be a subdivided lot for at most once in its whole lifetime (the subdivision process triggers creation of the subdivided lot). Hence, normally a parent Lot CSU can be subdivided into multiple subdivided Lot CSUs, and a subdivided Lot CSU has only one parent Lot CSU. All portions of a subdivision should be recorded upon subdivision action. Therefore, a one-to-many relationship exists between "Lot Register" entity and "Subdivision" entity in the data model.

4.4.8 The only special case in the relation between parent lot and subdivided lot happens in those Lot CSUs with lot designation as "Remaining Portion (RP) of …" . For example, the lot "Inland Lot 123" is first subdivided into "Inland Lot 123 Section A" and "Remaining Portion of Inland Lot 123", then after some time the latter is further subdivided to form "Inland Lot 123 Section B" and "Remaining Portion of Inland Lot 123". In this situation, the Lot CSU of "Remaining Portion of Inland Lot 123" can be involved in more than one subdivision processes in its lifetime, having parent lot as "Inland Lot 123" in the first subdivision and having parent lot as "Remaining Portion of Inland Lot 123" in the second subdivision. Upon subdivision of RP, the RP of lot retains the original PRN while a new PRN will be assigned to the newly created subdivided lot.

4.4.9 Upon subdivision of RP, the RP of lot retains the original PRN while a new PRN will be assigned to the newly created subdivided lot.

4.5 Entity Description

4.5.1 Some data items may be left as null due to time lag, but must be filled once the CSU is completely defined (e.g. cross-matching between the various formats of Lot ID). Such rules will be described in the Description column of the affected data item. Please also refer to section 3 for more information on the CSU lifecycle.

4.5.2 Some data items are applicable for particular records only. For non-applicable CSUs, such data item(s) are always left as null. For applicable CSUs, such data item(s) is left null for a particular CSU only when the information is not yet available.

4.5.3 Land Info

– Information of lots that mainly relates to the land administration. Please refer to section 2.5.9 for detailed descriptions of the data items corresponding to the four components of the C1000-format CSU ID.

(a) Data Item Description

Data Item	**Description**	**Format**	**Mandatory**
C1000 Lot ID	Concatenation of Lot Type Code, Lot Number Numeric, Lot Number Alpha and Section Code components in C1000-format CSU ID. Lot Type Code and Lot Number Numeric components are padded with leading zeros. Lot Number Alpha component is padded with trailing space to its maximum length if Section Code is not null. e.g. the ID ('320', '197', Null, 'B,4,RP') forms '032000197 B,4,RP'; the ID ('320', '197', Null, Null) forms '032000197'; the ID ('320', '197', 'A', Null) forms '032000197A'.	X(29)	Y
Lot Type Code	Code of the Lot Type part in the lot designation in C1000-format	N(4)	Y
Lot Number Numeric	Numeric part of the Lot Number part in the lot designation in C1000-format	N(5)	Y
Lot Number Alpha	Alphabetical part of the Lot Number part in the lot designation in C1000-format. The majority of records may have the numeric component only and this component is left as null.	X(4)	
Section Code	Section/subsection/extension codes delimited by commas (without space after) to define the levels of sections and subsections in the lot designation in C1000-format.	X(16)	

Data Item	Description	Format	Mandatory
PRN	Property Reference Number. This information is available only after the C1000-format CSU ID has been matched with the corresponding PRN-format CSU ID. For whole lots, matching between C1000-format CSU ID and the corresponding PRN-format CSU ID will be provided by LR in the corresponding Lot Register record before provision of the concerned Land Info record by LandsD. Upon importing the Land Info record, the matching result will then be copied from the associated Lot Register record to this data item. When this data item is not null, C1000 Lot ID and PRN data items must have the same value as in the matched-up Lot Register record. Warning should be given if this data item is reset to null or changed from a non-null value to another non-null value.	X(8)	
Status	Status of the Lot CSU, where A = Active Z = Inactive	X(1)	Y
Class Code	Class code (Type of Grant)	X(4)	Y
Site Area	Area of site	N(12,3)	
Site Area Unit	Measurement unit of Site Area data item e.g. 'SF', 'SM'	X(2)	
Ownership Code	Code of land ownership for government allocation	X(4)	
Condition Type	Type of lease condition	X(4)	
Condition Number	Lease condition reference number	X(35)	
Use Code	Lease use code e.g. 'AB', 'ACCS'	X(4)	
Lease Effective Start Date	Commencement date of the lease term. Applicable for whole lots only.	Date	
Lease Effective End Date	Expiry date of the lease term. Applicable for whole lots only.	Date	
Lease Term Length	Length of lease term. Applicable for whole lots only.	N(5)	

Data Item	Description	Format	Mandatory
Lease Term Unit	Measurement unit of lease term, where D = Days W = Weeks M = Months Y = Years Applicable for whole lots only.	X(1)	
Renewability	Renewability of the lease, where Y = Yes N = No Applicable for whole lots only.	X(1)	
Timestamp	Date and time when the record is last created/modified (i.e. when new data value(s) from Data Owner(s) is imported into the CSU dataset)	Date	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	C1000 Lot ID			
UK	Lot Type Code, Lot Number Numeric, Lot Number Alpha, Section Code			
FK	Lot Type Code		Lot Type Name	Lot Type Code
CK	Lot Number Numeric	> 0		
UK	PRN			
FK	PRN		Lot Register	PRN
CK	Status	In ('A', 'Z')		
FK	Class Code		Land Classification	Class Code
FK	Site Area Unit		Area Unit	Area Unit Code
FK	Ownership Code		Land Ownership	Ownership Code
FK	Condition Type		Lease Condition Type	Condition Type
FK	Use Code		Lease Use	Use Code
CK	Lease Term Unit	In ('D', 'W', 'M', 'Y')		

Type	Data Item	Validation	Reference Entity	Reference Data Item
CK	Renewability	In ('Y', 'N')		

(c) Data Ownership

All records	LandsD

4.5.4 Cert of Compliance Date

– Date(s) of Certificate(s) of Compliance issued for each lot

(a) Data Item Description

Data Item	Description	Format	Mandatory
C1000 Lot ID	Concatenation of Lot Type Code, Lot Number Numeric, Lot Number Alpha and Section Code components in C1000-format CSU ID	X(29)	Y
CC Date	Issue date of Certificate of Compliance	Date	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	C1000 Lot ID, CC Date			
FK	C1000 Lot ID		Land Info	C1000 Lot ID

(c) Data Ownership

All records	LandsD

4.5.5 Resumption Notice

– Information of resumption notices

(a) Data Item Description

Data Item	Description	Format	Mandatory
Resumption Notice No	Reference number of the resumption notice	X(8)	Y
Resumption Notice Date	Issue date of the resumption notice	Date	Y
Actual Reversion Date	The actual date that the affected lands to be resumed	Date	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	Resumption Notice No			

(c) Data Ownership

All records	LandsD

4.5.6 Land Resumption Notice

– Relation between resumption notices and the affected lots

(a) Data Item Description

Data Item	Description	Format	Mandatory
C1000 Lot ID	Concatenation of Lot Type Code, Lot Number Numeric, Lot Number Alpha and Section Code components in C1000-format CSU ID	X(29)	Y
Resumption Notice No	Reference number of the resumption notice	X(8)	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	C1000 Lot ID, Resumption Notice No			
FK	C1000 Lot ID		Land Info	C1000 Lot ID
FK	Resumption Notice No		Resumption Notice	Resumption Notice No

(c) Data Ownership

All records	LandsD

4.5.7 Lot Type Name

– Lookup table for Lot Type Codes

(a) Data Item Description

Data Item	Description	Format	Mandatory
Lot Type Code	Code of the Lot Type part in the lot designation e.g. '5590', '2130'	N(4)	Y
Lot Type Abbr	Abbreviated name of Lot Type e.g. 'KIL', 'DD169'	X(10)	Y
Lot Type Name	Full name of Lot Type e.g. 'KOWLOON INLAND LOT', 'DEMARCATION DISTRICT 169 LOT'	X(45)	Y
District Code	Code of district where the lot locates e.g. 'HK', 'K', 'IS'	X(2)	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	Lot Type Code			
UK	Lot Type Abbr Name			
UK	Lot Type Name			
FK	District Code		Lot Type District	District Code

(c) Data Ownership

All records	LandsD

4.5.8 Lot Type District

– Lookup table for District Codes. Codes initially set up: HK = Hong Kong, K = Kowloon, IS = Islands, TW = Tsuen Wan, KT = Kwai Tsing, ST = Sha Tin, N = North, TP = Tai Po, YL = Yuen Long, TM = Tuen Mun, SK = Sai Kung.

(a) Data Item Description

Data Item	Description	Format	Mandatory
District Code	Code of district	X(2)	Y
District Name	Full name of district	X(20)	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	District Code			
UK	District Name			

(c) Data Ownership

All records	LandsD

4.5.9 Land Classification

– Lookup table for Class Codes (i.e. types of grants)

(a) Data Item Description

Data Item	**Description**	**Format**	**Mandatory**
Class Code	Class code (Type of Grant)	X(4)	Y
Class Description	Full description of type of grants	X(50)	Y

(b) Constraint Description

Type	**Data Item**	**Validation**	**Reference Entity**	**Reference Data Item**
PK	Class Code			
UK	Class Description			

(c) Data Ownership

All records	LandsD

4.5.10 Area Unit

– Lookup table for Site Area Codes. Codes initially set up: SF = Square feet, SM = Square meters, AC = Acres, HA = Hectares.

(a) Data Item Description

Data Item	**Description**	**Format**	**Mandatory**
Area Unit Code	Code of area measurement unit	X(2)	Y
Area Unit Description	Description of area measurement unit	X(20)	Y

(b) Constraint Description

Type	**Data Item**	**Validation**	**Reference Entity**	**Reference Data Item**
PK	Area Unit Code			
UK	Area Unit Description			

(c) Data Ownership

All records	LandsD

4.5.11 Land Ownership

– Lookup table for Land Ownership Codes, which are mostly for Government Land Allocation. e.g. AMS = Auxiliary Medical Services, CAS = Civil Aid Services, FEHD = Food and Environmental Hygiene Department.

(a) Data Item Description

Data Item	**Description**	**Format**	**Mandatory**
Ownership Code	Code of land ownership	X(4)	Y
Ownership Description	Full description of land ownership	X(80)	Y

(b) Constraint Description

Type	**Data Item**	**Validation**	**Reference Entity**	**Reference Data Item**
PK	Ownership Code			
UK	Ownership Description			

(c) Data Ownership

All records	LandsD

4.5.12 Lease Condition Type

– Lookup table for Lease Condition Types. Codes initially set up: COEN = Conditions of Extension, COEX = Conditions of Exchange, COG = Conditions of Grant, CON = Conditions of Renewal, COR = Conditions of Regrant, COS = Conditions of Sale, GL = Government Lease, EC = Engineering Conditions.

(a) Data Item Description

Data Item	**Description**	**Format**	**Mandatory**
Condition Type	Type of lease condition	X(4)	Y
Condition Description	Description of lease condition type	X(40)	Y

(b) Constraint Description

Type	**Data Item**	**Validation**	**Reference Entity**	**Reference Data Item**
PK	Condition Type			

Type	Data Item	Validation	Reference Entity	Reference Data Item
UK	Condition Description			

(c) Data Ownership

All records	LandsD

4.5.13 Lease Use

– Lookup table for Lease Use Codes. e.g. AB = Abattoir, ACCS = Access/Footpath, ADPT = Ambulance depot.

(a) Data Item Description

Data Item	Description	Format	Mandatory
Use Code	Lease use code	X(4)	Y
Use Description	Description of lease use	X(40)	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	Use Code			
UK	Use Description			

(c) Data Ownership

All records	LandsD

4.5.14 Lot Polygon

– Lot boundaries of active lots. The graphic features are created by digitizing both the whole lot and section lot boundaries from the Land Record Plan. If the lot has been surveyed, the boundaries of such lot are created by inputting the coordinates of the boundary corners directly from the keyboard or from an existing ASCII data file.

(a) Data Item Description

Data Item	Description	Format	Mandatory
C1000 Lot ID	Concatenation of Lot Type Code, Lot Number Numeric, Lot Number Alpha and Section Code parts in C1000-format CSU ID.	X(29)	Y

Data Item	Description	Format	Mandatory
Geometry	Geometry of lot boundary polygon	Polygon	Y
Timestamp	Date and time when the record is last created/modified (i.e. when new data value(s) from Data Owner(s) is imported into the CSU dataset)	Date	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
FK	C1000 Lot ID		Land Info	C1000 Lot ID
CP	Geometry			

(c) Data Ownership

All records	LandsD

4.5.15 Overlap Lot Polygon

– Active lot boundaries that are overlapping with other neighbouring lots.

(a) Data Item Description

Data Item	Description	Format	Mandatory
C1000 Lot ID	Concatenation of Lot Type Code, Lot Number Numeric, Lot Number Alpha and Section Code parts in C1000-format CSU ID.	X(29)	Y
Geometry	Geometry of lot boundary polygon	Polygon	Y
Timestamp	Date and time when the record is last created/modified (i.e. when new data value(s) from Data Owner(s) is imported into the CSU dataset)	Date	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
FK	C1000 Lot ID		Land Info	C1000 Lot ID
CP	Geometry			

(c) Data Ownership

All records	LandsD

4.5.16 Lot Register

– Lot registers maintained by LR. Sub-division registers (SDR) maintained by LR will not be included. Please refer to section 2.5.10 for detailed descriptions of the data items corresponding to the eleven components of the LR structural format CSU ID.

(a) Data Item Description

Data Item	**Description**	**Format**	**Mandatory**
PRN	Property Reference Number	X(8)	Y
Lot Type	The Lot Type component in the lot designation in LR structural format	X(15)	Y
Lot Number	The Lot Number component in the lot designation in LR structural format	X(6)	Y
Section 1	The Section 1 component in the lot designation in LR structural format. i.e. the first section appeared in a lot designation	X(4)	
Subsection 1	The Subsection 1 component in the lot designation in LR structural format. i.e. the first subsection appeared in a lot designation	X(4)	
Section 2	The Section 2 component in the lot designation in LR structural format. i.e. the second section appeared in a lot designation	X(4)	
Subsection 2	The Subsection 2 component in the lot designation in LR structural format. i.e. the second subsection appeared in a lot designation	X(2)	
Section 3	The Section 3 component in the lot designation in LR structural format. i.e. the third section appeared in a lot designation	X(4)	
Subsection 3	The Subsection 3 component in the lot designation in LR structural format. i.e. the third subsection appeared in a lot designation	X(2)	
Section 4	The Section 4 component in the lot designation in LR structural format. i.e. the forth section appeared in a lot designation	X(4)	

Data Item	Description	Format	Mandatory
Extension	'(EX)' if the lot designation ends with 'AND THE EXTENSION THERETO'; Null otherwise	X(4)	
Miscellaneous Item	Indicator of peculiar lots, where Null = normal lot Non-null value (normally 9100 or above) = peculiar lot	N(4)	
Eng Lot Description	The textual lot designation in English. Long translation form is used instead of abbreviated form. E.g. 'KOWLOON INLAND LOT 123', 'DD 360 LOT 1', 'THE EXTENSION TO REMAINING PORTION OF INLAND LOT NO.269A'	X(320)	Y
C1000 Lot ID	Concatenation of Lot Type Code, Lot Number Numeric, Lot Number Alpha and Section Code parts in C1000-format CSU ID. For whole lots, this information will be provided by LR upon creation of the Lot Register record. For subdivided lots, matching between C1000-format CSU ID and the corresponding PRN-format CSU ID will be provided by LandsD in the corresponding Land Info record. Upon importing the Land Info records, the matching result will then be copied to this data item. When this data item is not null and the concerned Land Info record already created, C1000 Lot ID and PRN data items must have the same value as in the matched-up Land Info record. Warning should be given if this data item is reset to null or changed from a non-null value to another non-null value.	X(29)	
Timestamp	Date and time when the record is last created/modified (i.e. when new data value(s) from Data Owner(s) is imported into the CSU dataset)	Date	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	PRN			
UK	Lot Type, Lot Number, Section 1, Subsection 1, Section 2, Subsection 2, Section 3, Subsection 3, Section 4, Extension, Miscellaneous Item			
FK	Lot Type		Lot Register Lot Type	Lot Type Code
UK	Eng Lot Description			
UK	C1000 Lot ID			

(c) Data Ownership

All records	LR

4.5.17 Lot Register Lot Type

– Lookup table for Lot Type Codes adopted by Lot Registers from LR.

(a) Data Item Description

Data Item	Description	Format	Mandatory
Lot Type Code	Code of the Lot Type part in the lot designation e.g. 'AIL', 'KIL', 'DD360L'	X(15)	Y
Lot Type Name	Full name of Lot Type e.g. 'ABERDEEN INLAND LOT', 'KOWLOON INLAND LOT', 'DD 360 LOT'	X(45)	Y
LR Area Code	Code of areas where the lots locate (Hong Kong Island, Kowloon, NT Urban, Tsuen Wan, Sha Tin, Tuen Mun, Yuen Long, Tai Po, North, Sai Kung, or Islands)	X(2)	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	Lot Type Code			
UK	Lot Type Name			
FK	LR Area Code		Lot Register Area	LR Area Code

(c) Data Ownership

All records	LR

4.5.18 Lot Register Area

– Lookup table for Area Codes adopted by Lot Registers from LR. Codes initially set up: 10 = Hong Kong Island, 20 = Kowloon, 30 = NT Inland Lot, 41 = Tsuen Wan, 42 = Sha Tin, 43 = Tuen Mun, 44 = Yuen Long, 45 = Tai Po, 46 = North, 47 = Sai Kung, 48 = Islands.

(a) Data Item Description

Data Item	Description	Format	Mandatory
LR Area Code	Code of area	X(2)	Y
LR Area Name	Full name of area	X(20)	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	LR Area Code			
UK	LR Area Name			

(c) Data Ownership

All records	LR

4.5.19 Memorial

– Memorials registered at LR. Only those memorials related to lot registers are covered, but not for those related to SDR.

(a) Data Item Description

Data Item	Description	Format	Mandatory
Memorial No	Unique identifier of registered memorials	X(14)	Y
Date of Instrument	The date of the instrument	Date	Y

Data Item	Description	Format	Mandatory
Main Nature Code	The main nature code of the document	X(2)	Y
Sub Nature Code	The sub nature code of the document	X(1)	Y
Nature Description	Textual description on nature of the document	X(105)	Y
Consideration Part Code	The consideration code of the document	X(4)	
Consideration	The consideration (HK$) of the document	N(16,2)	
Consideration Text	The consideration (text) of the document. Applicable only when both Consideration and Consideration Part Code are not available.	X(100)	

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	Memorial No			
FK	Main Nature Code, Sub Nature Code		Memorial Nature	Main Nature Code, Sub Nature Code
CK	Consideration Part Code	In ('PT.', 'EXT.')		

(c) Data Ownership

All records	LR

4.5.20 Lot Register Memorial

– List of memorials that involved with a Lot Register.

(a) Data Item Description

Data Item	Description	Format	Mandatory
PRN	Property Reference Number.	X(8)	Y
Memorial No	Unique identifier of registered memorials	X(14)	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	PRN, Memorial No			
FK	PRN		Lot Register	PRN

Type	Data Item	Validation	Reference Entity	Reference Data Item
FK	Memorial No		Memorial	Memorial No

(c) Data Ownership

All records	LR

4.5.21 Memorial Nature

– Lookup table for nature categorizations of memorials.

(a) Data Item Description

Data Item	Description	Format	Mandatory
Main Nature Code	Main nature code	X(2)	Y
Sub Nature Code	Sub nature code	X(1)	Y
Description	General description of the nature	X(105)	Y
Explanation Remarks	Explanation remarks of the nature	X(100)	

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	Main Nature Code, Sub Nature Code			

(c) Data Ownership

All records	LR

4.5.22 Subdivision

– Lot subdivision registered by LR. This entity stores the linkage between the parent lot and the subdivided lots involved in a subdivision. All portions of a subdivision would be recorded upon subdivision. A one-to-many relationship was built between "Lot Register" entity and "Subdivision" entity.

(a) Data Item Description

Data Item	Description	Format	Mandatory
Subdivided Lot PRN	Property Reference Number of the subdivided child lot	X(8)	Y

Data Item	Description	Format	Mandatory
Subdivision Date	Transaction date of the memorial regarding registration of the lot subdivision	Date	Y
Parent Lot PRN	Property Reference Number of the parent lot being subdivided	X(8)	Y

(b) Constraint Description

Type	Data Item	Validation	Reference Entity	Reference Data Item
PK	Subdivided Lot PRN, Subdivision Date			
FK	Parent Lot PRN		Lot Register	PRN
FK	Subdivided Lot PRN		Lot Register	PRN

(c) Data Ownership

All records	LR

5 Maintenance of the CSU

5.1 Data Provision Frequency

5.1.1 To ensure that the time currency of CSU data is maintained to an acceptable level, each Data Owner shall commit to provide their data to the Data Agent at the agreed updating frequency.

5.1.2 Data Owners shall provide the latest changes on CSU relevant data to the Data Agent on a regular basis. All changes since the last data upload must be included in the interface data file in the new data upload.

5.1.3 Lot CSU record consists of attributes contributed from LandsD and LR, and mapping of CSU ID should be performed between LandsD's C1000-format and LR's PRN-format Lot ID. As described in section 3.2.4, mapping between the two Lot IDs much depend on timely data exchange between LandsD and LR. That is, Lot Register and Subdivision records related to the subdivided lots, which will be contributed by LR, must be made available to LandsD before they register the lot boundaries of the subdivided lots into the C1000 Library. Hence, it is recommended that LR should provide their latest changes to the CSU dataset at least once per week (preferably daily, like availability of MDB data in external system interface of LRS/IRIS); and, LandsD should download the latest changes from the CSU dataset at 1-week or shorter intervals.

5.1.4 Table below provides information of data provision frequency for Lot CSU of the data owners, LandsD and LR.

Data Owner	**Current Outgoing Data Sharing Frequency**	**Future Data Provision Frequency**
LandsD	Half-yearly / Direct Access[1]	Monthly
LR	Daily	Daily

Table 4 Data Provision Frequency o f Lot CSU

[1] Currently there are several departments having direct connection link to LandsD to obtain the latest data update online. The direct access does not necessarily mean a high data exchange frequency. The data exchange frequency depends on how frequent the data receiving departments download the data from the data-providing department.

Direct Access incurs additional costs on communication lines and hardware maintenance. With the implementation of DAM, information from different PDs will be integrated to the Lot CSU and made available to PDs. To minimize duplication of resource, it is recommended to minimize the Direct Access approach if possible

5.2 Data Dissemination Frequency

5.2.1 The Data Agent will update the CSU dataset using the latest data provided by the Data Owners. Periodically the Data Agent will pre-pack the CSU data in all the Standard File Formats and make the files available for download by Data Users.

5.2.2 Below presents the desirable and minimal tolerable data dissemination frequency for Data Users:

Data User	Required Data Dissemination Frequency	
	Desirable	Lowest Frequency Tolerable
BD	Biweekly	Monthly
CED	Monthly	Quarterly
DSD	Monthly	Half-yearly
LandsD	Biweekly	Monthly
PlanD	Monthly	Quarterly
RVD	Monthly	Quarterly

Table 5 Data Dissemination Frequency o f Lot CSU

5.3 Mode of Dissemination

5.3.1 Upon implementation of CSU, the Data Users should acquire the data from the Data Agent, rather than obtaining data from each respective Data Owners, such that the data exchange processes would be streamlined.

5.3.2 To minimize duplicated effort of data dissemination, CSU data shall be disseminated from a single source, i.e. Data Agent. Among the 13 PDs, the current mode of exchange of PLW data will be retained except those replaced by the exchange of CSU dataset, dissemination of which will be carried out by data dissemination system provide by each respective Data Agent.

5.3.3 An automated data dissemination system is recommended for the Lot CSU. A Data Dissemination System (DDS) will be developed and hosted by the Data Agent, i.e. LandsD, who is recommended to handle dissemination of Building CSU, Lot CSU and Road Centreline CSU data.

5.3.4 Subject to finalization of user requirements and selected technical option in the supplementary feasibility study for DDS,

(a) The system would include a central database, data upload facilities, data import programs, data conversion tools and facilities to allow data download by Data Users. Web-based user interface might be considered as an option for data upload and download facilities.

(b) Data downloading from Data Agent to Data Users might be supported in both full dataset mode and incremental changes mode by the dissemination system hosted by the Data Agent. Periodically the Data Agent will pre-pack incremental changes in CSU information in all the supported file formats and make the packed files available for download from the dissemination system.

(c) Data Users can download the incremental changes in their preferred file format at their convenience. Full dataset download will be supported on ad hoc basis. Due to time needed for file format conversion for the large data volume, a full dataset in a requested file format may not be available for download on the fly but only after a couple of days. Meanwhile, all textual reference code tables will be available in full set mode only and will be refreshed at the same interval as the incremental changes.

Appendix A. Sample Section Codes in LandsD C1000-Format Lot CSU ID

A.1.1 The samples below illustrates how Section Code component in the C1000-format Lot CSU ID is recorded in various scenarios:

Lot Name on Record[1]	**Section Code**	**Lot name on Printout**
Ext to KIL 123	EXTO	Ext to KIL 123
KIL 123 Ext	EXT	KIL 123 Ext
KIL 123 &Ext	&EXT	KIL 123 &Ext
KIL 123 &Exts	&EXTS	KIL 123 &Exts
Ext to KIL 123 &Ext Thereto	EXTO,&EXTTO	Ext to KIL 123 &Ext Thereto
Ext to TYTL 48 RP and the Exts Thereto	EXTO,RP,&EXTSTO	Ext to TYTL 48 RP &Exts Thereto
Ext to TYTL 48 RP 2nd Ext	EXTO,RP,2nd,EXT	Ext to TYTL 48 RP 2nd Ext
Ext to TYTL 48 S.A 3rd Ext	EXTO,A,3rd,EXT	Ext to TYTL 48 S.A 3rd Ext
KIL 123 Further Ext	FEXT	KIL 123 Further Ext
KIL 123 &?? (? = a character, e.g. &RP)	&?? (e.g. &RP)	KIL 123 &?? (e.g. &RP)
KIL 123-131	-131	KIL 123-131
KIL 123-131,135,139-141	-131,135,139-141	KIL 123-131,135,139-141
KIL 123,131,135-139	131,135-139	KIL 123,131,135-139
KIL 123A (A = Lot Number (Alpha) component)	<Null>	KIL 123A
KIL 123 S.A	A	KIL 123 S.A
KIL 123 S.AA	AA	KIL 123 S.AA
KIL 123 S.A ss.1	A,1	KIL 123 S.A ss.1
KIL 123 S.A ss.1 RP	A,1,RP	KIL 123 S.A ss.1 RP
KIL 123 S.A ss.B RP	A,B,RP	KIL 123 S.A ss.B RP
KIL 123 S.3 ss.A RP	@3,A,RP	KIL 123 S.3 ss.A RP
KIL 123 S.3 ss.5 RP	@3,5,RP	KIL 123 S.3 ss.5 RP
KIL 123 (P)	(P)	KIL 123 (P)
KIL 123 (Portion)	(Portion)	KIL 123 (Portion)
KIL 123 S.A, S.C & S.E	A S.C & S.E	KIL 123 S.A S.C & S.E
KIL 123 S.A, S.B RP & S.C RP	A S.BRP & S.CRP	KIL 123 S.A S.BRP & S.CRP

[1] The sample Lot Names are for illustration purpose and may not be valid lot names.

GLA-HK123 (SITE A)	(SITE A)	GLA-HK123 (SITE A)
GLA-HK123 (SITE 2)	(SITE 2)	GLA-HK123 (SITE 2)
GLA-TK338 (AREA B)	(AREA B)	GLA-TK338 (AREA B)

Appendix B. Sample LR Structural Format Lot CSU ID

B.1.1 The samples below illustrates how section, subsection, extension components in the LR structural format Lot CSU ID are recorded in various scenarios:

Registered Lot No.[1]	**S1[2]**	**ss1**	**S2**	**ss2**	**S3**	**ss3**	**S4**	**Ext**	**Misc Item[3]**
Ext to KIL 123									✓
KIL 123 Ext									✓
KIL 123 &Ext								(EX)	
KIL 123 &Exts									✓
KIL 123 &Ext Thereto								(EX)	
Ext to KIL 123 &Ext Thereto									✓
Ext to TYTL 48 RP and the Exts Thereto									✓
Ext to TYTL 48 RP 2nd Ext									✓
Ext to TYTL 48 S.A 3rd Ext									✓
KIL 123 Further Ext									✓
KIL 123 RP	(RP)								
KIL 123 &RP									✓
KIL 123-131									✓
KIL 123-131,135,139-141									✓
KIL 123,131,135-139									✓
KIL 123A (Lot Number = '123A')									
KIL 123 S.A	A								
KIL 123 S.AA	AA								
KIL 123 S.A-S.K									✓
KIL 123 S.A ss.1	A	1							
KIL 123 S.A ss.1 RP	A	1	(RP)						
KIL 123 S.A ss.B RP	A	B	(RP)						
KIL 123 S.3 ss.A RP	3	A	(RP)						
KIL 123 S.3 ss.5 RP	3	5	(RP)						

[1] The Lot No. that recorded in the land grant documents. E.g. the sample "KIL 123-131" is regarded as one lot recorded in a land grant document, instead of an area composed of KIL 123, KIL 124 & etc. The samples are for illustration purpose and may not be valid lot nos.

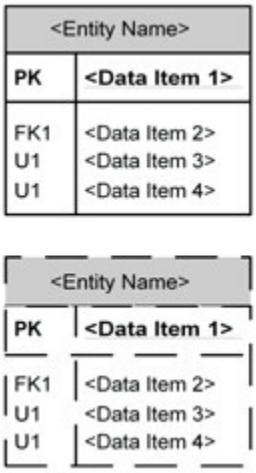
[2] S1: Section 1; ss1: Subsection 1; S2: Section 2; ss2: Subsection 2; S3: Section 3; ss3: Subsection 3; S4: Section 4. A cell under the S1 - Extension columns is blank when the component value is null.

[3] When Misc Item column is ticked, it means this lot number is regarded as a peculiar lot and hence an LR's internal reference number (a numeric value of 9100 or greater) will be assigned to the Miscellaneous Item component.

Registered Lot No.[1]	**S1[2]**	**ss1**	**S2**	**ss2**	**S3**	**ss3**	**S4**	**Ext**	**Misc Item[3]**
KIL 123 (P)									✓
KIL 123 (Portion)									✓
KIL 123 S.A, S.C & S.E									✓
KIL 123 S.A, S.B RP & S.C RP									✓
GLA-HK123 (SITE A)									✓
GLA-HK123 (SITE 2)									✓
GLA-TK338 (AREA B)									✓
IL 94 RP S.E ss.2 RP	(RP)		E	2	(RP)				
IL 94 RP S.G ss.2 RP &Ext	(RP)		G	2	(RP)			(EX)	
IL 7760 &Ext RP	(RP)							(EX)	

Appendix C. Conventions for Data Interface Requirement

C.1.1 Logical Data Structure Diagram

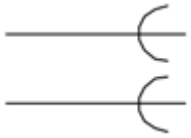


Entity
The upper part in grey shading shows the name of the entity. The lower part lists only the data items involved in the primary key, unique key(s) and foreign key(s) of the entity, while the other data items of the entity will be elaborated in Entity Description. Composite keys are represented by same key name in multiple data items (e.g. two data items marked as "U1" means a composite unique key composed of two data items) Mandatory data item(s) will be printed in bold text.
For diagrams spanned across multiple pages, the first occurrence of each entity is shown in solid-line border while all repeated occurrences in later pages are shown in dotted-line border.

Line with crow's foot
"many" end of a relation

Normal solid line
Mandatory end of a relation

Line with small circle at the end
Optional end of a relation. That is, a record on the left may not have any associated record on the right.



Line with a curve at the end
Exclusive relation. i.e. only 1 among the connected entities on left is linked to the entity on right at a time

C.1.2 Entity Description - Data Item Description - Format

(a) X(n) : Variable-length character strings of max. length n

(b) CX(n): Variable-length character strings of maximum n Chinese characters. Maximum number of bytes will depend on the character set used by the CSU dataset. E.g. CX(5) occupies at most 10 bytes if data are stored in Big5 character set.

(c) N(m,n) : Fixed and floating point numbers, where m is precision (total number of digits before and after decimal point) and n is scale (number of digits to the right of decimal point). The n part is omitted, i.e. denoted in N(m), for integers.

(d) Date : Point-in-time values (date and time)

(e) Polygon : Closed polygon representing a spatial area.

C.1.3 Entity Description - Constraint Description - Type

(a) PK : Data item is part of primary key, which is used to uniquely identify a record in the entity.

(b) FK : Data item is part of foreign key, which means the data item values, if not null, must match the unique identifier of another entity.

(c) UK : Data item is part of alternate key, which is used as an alternate way to uniquely identify a record in the entity.

(d) CK : The value of data item should be checked ensuring that it falls within or meets the predefined values/ranges/rules. Hence, non-mandatory data items can be left as null, or otherwise must meet the criteria.

(e) CP : The value of geometry type data item should be a closed polygon.

C.1.4 Entity Description - Data Ownership - Condition

(a) RelatedEntity.DataItem : Reference to value of DataItem of the linked RelatedEntity record. For example, "CSU Feature.Status" means the Status data item of the related CSU Feature record. Unless specified, relation and linked key is determined by the concerned FK constraint as defined in Constraint Description.