Digital Submissions @ RS Portal

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12 &14 November 2018
Training Room, SLA

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Content

- Background
- Cadastral Survey Management System (CSMS)
- Refresher on SG LandXML
- Plan Generation

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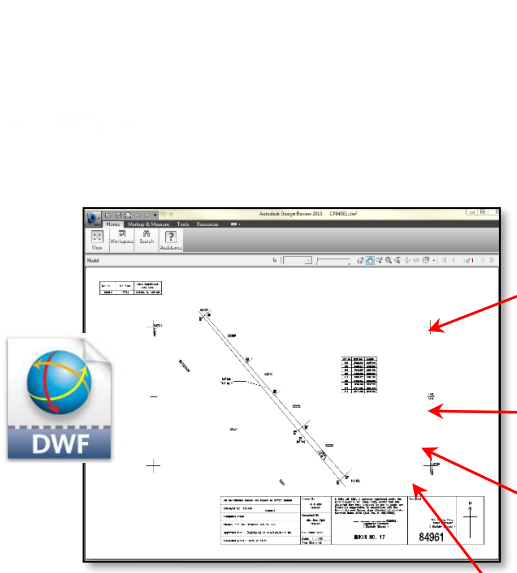
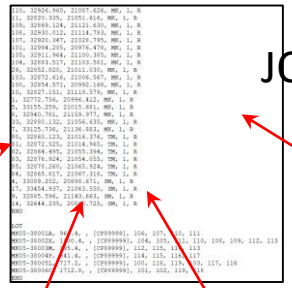
Previous Cadastral Submissions in Machine-non-Processable Formats

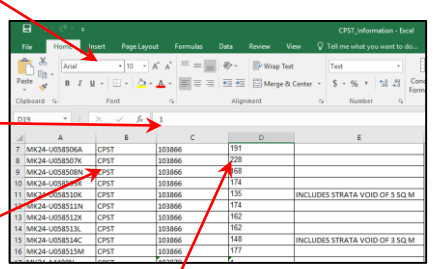


Plans

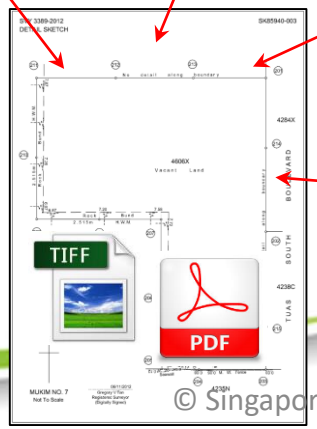


JOB, SVY files

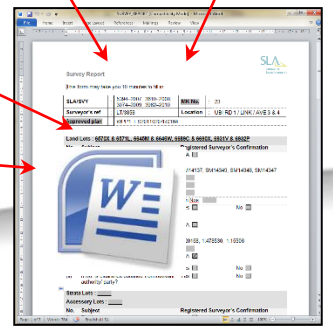
Info (SVY Number, Coordinates and Lot Number, etc.) Not Matched



Excel files



FD, SK



Word documents

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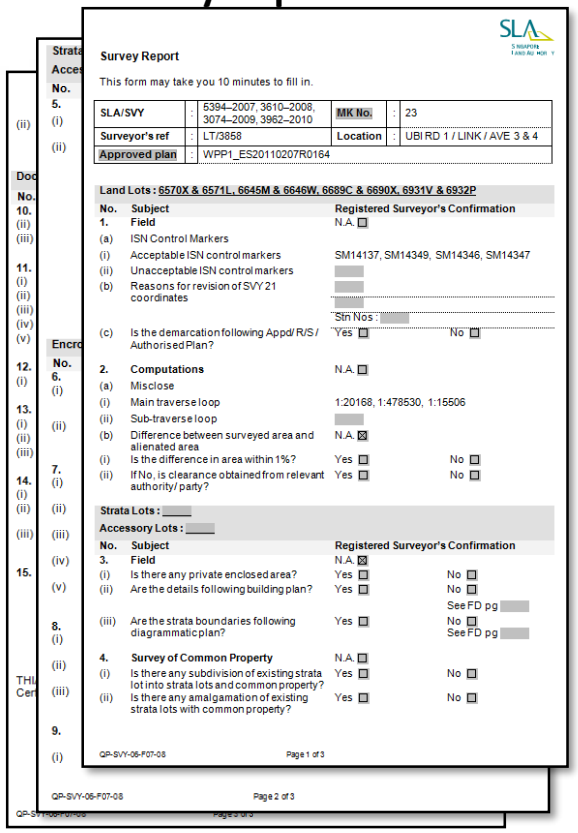
Too Many Forms

- **Survey Report**



Survey Report

This form may take you 10 minutes to fill in.

SLA/SVY	:	5394–2007, 3610–2008, 3074–2009, 3962–2010	MK No.	:	23
Surveyor's ref	:	LT/3858	Location	:	UBI RD 1 / LINK / AVE 3 & 4
Approved plan	:	WPP1_ES20110207R0164			

Land Lots : 6570X & 6571L, 6645M & 6646W, 6689C & 6690X, 6931V & 6932P

No.	Subject	Registered Surveyor's Confirmation
1.	Field	N.A. ☐
(a)	ISN Control Markers	
(i)	Acceptable ISN control markers	SM14137, SM14349, SM14346, SM14347
(ii)	Unacceptable ISN control markers	
(b)	Reasons for revision of SVY 21 coordinates	Stn Nos :
(c)	Is the demarcation following Appd/ R/S / Authorised Plan?	Yes ☐ No ☐
2.	Computations	N.A. ☐
(a)	Misclose	
(i)	Main traverse loop	1:20168, 1:478530, 1:15506
(ii)	Sub-traverse loop	
(b)	Difference between surveyed area and alienated area	N.A. ☒
(i)	Is the difference in area within 1%?	Yes ☐ No ☐
(ii)	If No, is clearance obtained from relevant authority/ party?	Yes ☐ No ☐

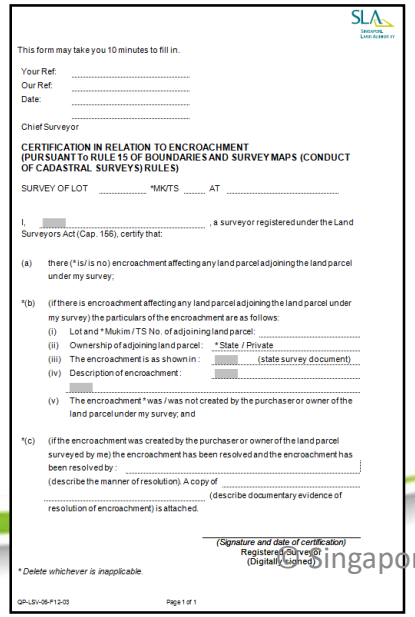
Strata Lots :

Accessory Lots :

No.	Subject	Registered Surveyor's Confirmation
3.	Field	N.A. ☒
(i)	Is there any private enclosed area?	Yes ☐ No ☐
(ii)	Are the details following building plan?	Yes ☐ No ☐ See FD pg
(iii)	Are the strata boundaries following diagrammatic plan?	Yes ☐ No ☐ See FD pg
4.	Survey of Common Property	N.A. ☐
(i)	Is there any subdivision of existing strata lot into strata lots and common property?	Yes ☐ No ☐
(ii)	Is there any amalgamation of existing strata lots with common property?	Yes ☐ No ☐

QP-SVY-06-F07-08 Page 1 of 3

- **Encroachment Report**



This form may take you 10 minutes to fill in.

Your Ref: .....
Our Ref: .....
Date: .....

Chief Surveyor

CERTIFICATION IN RELATION TO ENCROACHMENT (PURSUANT TO RULE 15 OF BOUNDARIES AND SURVEY MAPS (CONDUCT OF CADASTRAL SURVEYS) RULES)

SURVEY OF LOT ..... *MK/TS ..... AT .....

I, ... , a surveyor registered under the Land Surveyors Act (Cap. 156), certify that:

(a) there (*is/ is no) encroachment affecting any land parcel adjoining the land parcel under my survey;

*(b) (if there is encroachment affecting any land parcel adjoining the land parcel under my survey) the particulars of the encroachment are as follows:
(i) Lot and *Mukim / TS No. of adjoining land parcel: .....
(ii) Ownership of adjoining land parcel: *State / Private
(iii) The encroachment is as shown in : ..... (state survey document)
(iv) Description of encroachment: .....
(v) The encroachment * was / was not created by the purchaser or owner of the land parcel under my survey; and

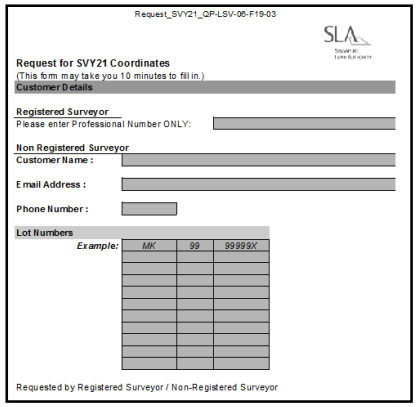
*(c) (if the encroachment was created by the purchaser or owner of the land parcel surveyed by me) the encroachment has been resolved and the encroachment has been resolved by : ..... (describe the manner of resolution). A copy of ..... (describe documentary evidence of resolution of encroachment) is attached.

(Signature and date of certification)
Registered Surveyor
(Digitally signed)

* Delete whichever is inapplicable.

QP-LSV-06-F12-03 Page 1 of 1

- **Request for SVY 21 Coordinates**



Request_SVY21_QP-LSV-06-F19-03

Request for SVY21 Coordinates
(This form may take you 10 minutes to fill in.)

Customer Details

Registered Surveyor
Please enter Professional Number ONLY:

Non Registered Surveyor
Customer Name :
Email Address :
Phone Number :

Lot Numbers

Example:	MK	99	9999X

Requested by Registered Surveyor / Non-Registered Surveyor

- **List of Forms**

Forms

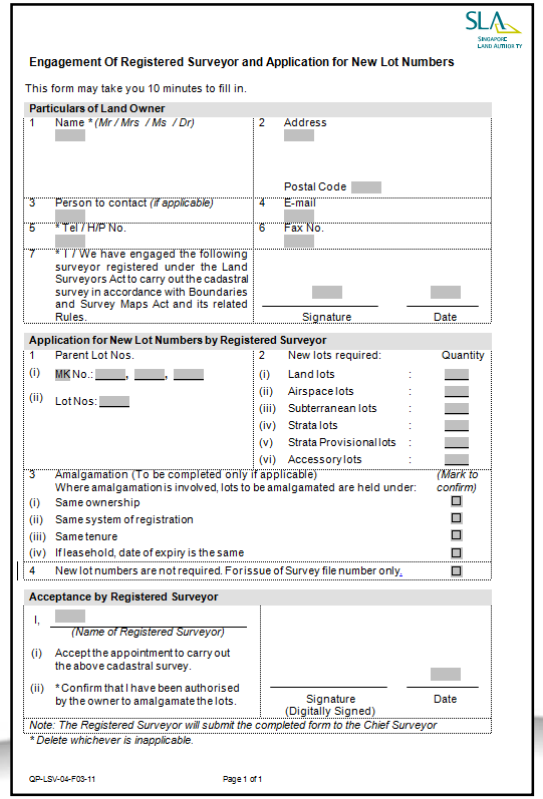
We have listed the forms that Registered Surveyors may be required to fill for your easy reference and action. Please click on the relevant link:

1. EDM Calibration Booking Form
2. Checklist for Cadastral Survey under SVY21 Datum
3. Checklist for Inspection of Strata Certified Plan
4. Checklist for RT plan under SVY21
5. Calculation of Survey Fee Payable to Chief Surveyor
6. Engagement of Registered Surveyor and Application for New Lot Numbers
7. Survey Report
8. Comparison of Areas
9. Certificate in relation to Encroachment
10. Request for ISN Markers
11. Request for Survey Document Number
12. Request for SVY21 Coordinates
13. Submission of ISN GPS Observation
14. Application Form for SiReNT Services
15. Authorisation for Deduction of Survey Fees

Reference Documents

1. Certificate of Employment of Assistants of Registered Surveyor
2. Notice to enter Land / Flat to do Boundary Survey

- **Engagement of RS and Application for New Lot Numbers**



Engagement Of Registered Surveyor and Application for New Lot Numbers

This form may take you 10 minutes to fill in.

Particulars of Land Owner

1	Name * (Mr / Mrs / Ms / Dr)	2	Address Postal Code
3	Person to contact (if applicable)	4	E-mail
5	* Tel / H/P No.	6	Fax No.
7	* I / We have engaged the following surveyor registered under the Land Surveyors Act to carry out the cadastral survey in accordance with Boundaries and Survey Maps Act and its related Rules.		Signature / Date

Application for New Lot Numbers by Registered Surveyor

1	Parent Lot Nos. (i) MK No.: ____, ____, ____ (ii) Lot Nos: ____	2	New lots required: Quantity (i) Land lots : (ii) Airspace lots : (iii) Subterranean lots : (iv) Strata lots : (v) Strata Provisional lots : (vi) Accessory lots :
3	Amalgamation (To be completed only if applicable) Where amalgamation is involved, lots to be amalgamated are held under:		(Mark to confirm)
	(i) Same ownership		☐
	(ii) Same system of registration		☐
	(iii) Same tenure		☐
	(iv) If leasehold, date of expiry is the same		☐
4	New lot numbers are not required. For issue of Survey file number only.		☐

Acceptance by Registered Surveyor

I, _____ (Name of Registered Surveyor)

(i) Accept the appointment to carry out the above cadastral survey.

(ii) * Confirm that I have been authorised by the owner to amalgamate the lots.

Signature (Digitally Signed) / Date

Note: The Registered Surveyor will submit the completed form to the Chief Surveyor

* Delete whichever is inapplicable.

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Common Errors

Major Errors

No.	Item
1.	Lot number : Incorrect lot number and check alphabet
2.	Lot boundaries : Not set up or incorrectly set up in the survey documents
3.	Demarcation: a. Not following the original position of boundary b. Deviation from request for survey(RS) plan c. Incomplete d. Encroachment is not resolved
4.	Details : e. Not fully picked up f. Encroachment details not clearly defined g. Wall details not described as party wall or garden wall h. No offsets or radiations to details and party wall i. Details not described in Field Book
5.	SVY21 datum and ISN survey: j. Failure to install or connect to for 4 ISN markers k. Failure to adopt ISN survey procedures
6.	Area : Incorrect computation
7.	Coordinates are not consistent with SVY21 values
8.	Strata lot boundaries : Not agreeing with Building Plan or the approved or authorised subdivision plans
9.	Floppy diskette containing lot/strata information l. Not submitted m. Incorrect format used for uploading in Lot Base System

Minor Errors

No.	Item
1.	Boundary marks wrongly described
2.	House numbers not shown on plan
3.	Adjacent lot numbers and boundaries not shown or outdated
4.	Extreme coordinates omitted or incorrectly shown on plan
5.	Incorrect road names
6.	Incorrect cadastral map numbers and grids
7.	Incorrect Section 14(4) plan reference
8.	Incorrect references of records
9.	IRAS notification of addresses not submitted
10.	Incorrect height on Elevation Sketch

Source: Most Frequent Errors @ http://www.sla.gov.sg/

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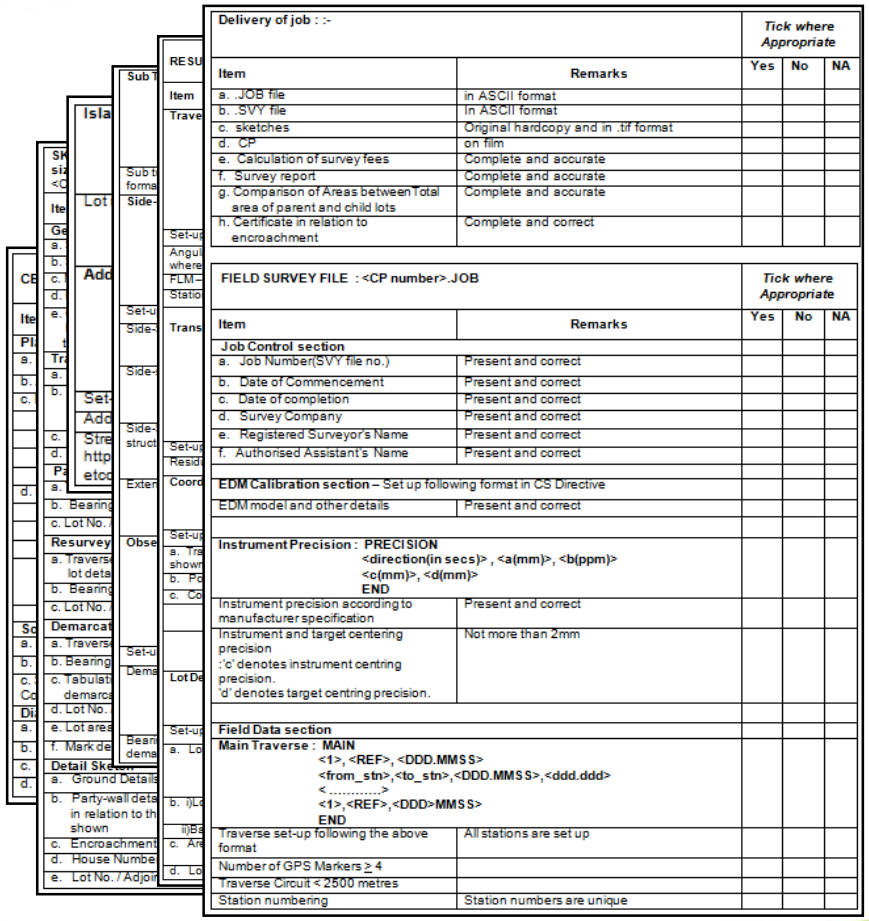
Laborious Check Lists

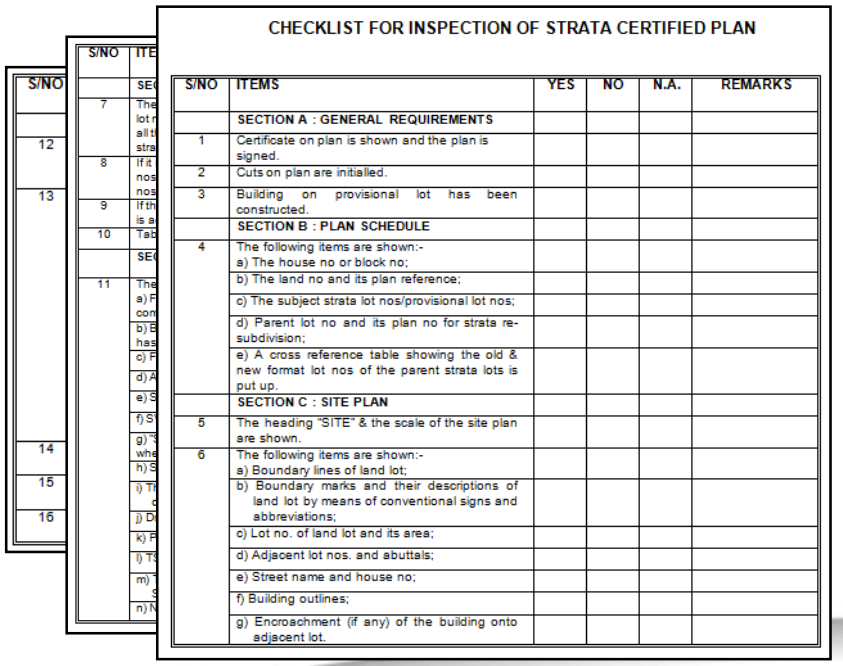
- **Check List for Certified Plan**



Delivery of job : :-		Tick where Appropriate		
Item	Remarks	Yes	No	NA
a. .JOB file	in ASCII format			
b. .SVY file	In ASCII format			
c. sketches	Original hardcopy and in .tif format			
d. CP	on film			
e. Calculation of survey fees	Complete and accurate			
f. Survey report	Complete and accurate			
g. Comparison of Areas between Total area of parent and child lots	Complete and accurate			
h. Certificate in relation to encroachment	Complete and correct			

FIELD SURVEY FILE : <CP number>.JOB		Tick where Appropriate		
Item	Remarks	Yes	No	NA
Job Control section				
a. Job Number(SVY file no.)	Present and correct			
b. Date of Commencement	Present and correct			
c. Date of completion	Present and correct			
d. Survey Company	Present and correct			
e. Registered Surveyor's Name	Present and correct			
f. Authorised Assistant's Name	Present and correct			
EDM Calibration section – Set up following format in CS Directive				
EDM model and other details	Present and correct			
Instrument Precision : PRECISION **<direction(in secs)> , <a(mm)>, <b(ppm)>** **<c(mm)>, <d(mm)>** **END**				
Instrument precision according to manufacturer specification	Present and correct			
Instrument and target centering precision :'c' denotes instrument centring precision. 'd' denotes target centring precision.	Not more than 2mm			
Field Data section				
Main Traverse : MAIN **<1>, <REF>, <DDD.MMSS>** **<from_stn>,<to_stn>,<DDD.MMSS>,<ddd.ddd>** **< .....>** **<1>,<REF>,<DDD>MMSS>** **END**				
Traverse set-up following the above format	All stations are set up			
Number of GPS Markers ≥ 4				
Traverse Circuit < 2500 metres				
Station numbering	Station numbers are unique			

- **Check List for Strata Certified Plan**



CHECKLIST FOR INSPECTION OF STRATA CERTIFIED PLAN

S/NO	ITEMS	YES	NO	N.A.	REMARKS
	SECTION A : GENERAL REQUIREMENTS				
1	Certificate on plan is shown and the plan is signed.				
2	Cuts on plan are initialled.				
3	Building on provisional lot has been constructed.				
	SECTION B : PLAN SCHEDULE				
4	The following items are shown:- a) The house no or block no;				
	b) The land no and its plan reference;				
	c) The subject strata lot nos/provisional lot nos;				
	d) Parent lot no and its plan no for strata re-subdivision;				
	e) A cross reference table showing the old & new format lot nos of the parent strata lots is put up.				
	SECTION C : SITE PLAN				
5	The heading "SITE" & the scale of the site plan are shown.				
6	The following items are shown:- a) Boundary lines of land lot;				
	b) Boundary marks and their descriptions of land lot by means of conventional signs and abbreviations;				
	c) Lot no. of land lot and its area;				
	d) Adjacent lot nos. and abuttals;				
	e) Street name and house no;				
	f) Building outlines;				
	g) Encroachment (if any) of the building onto adjacent lot.				

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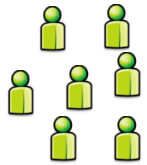
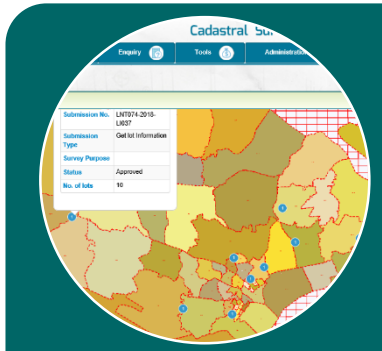
Cadastral Survey Management System & Benefits

SG LandXML



Registered Surveyors

Submit for approval

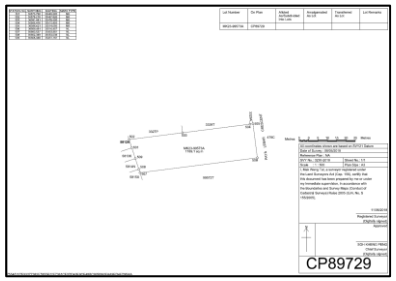


Cadastral Survey Management System

- Cadastral Rules Validations
- Highly Automated
- Data Integrity Checks
- Online Plan Generation
- Quick Response

Cadastral Database

Cadastral Plans



- Faster issuance of Titles
- Improves the quality of plan data
- Automates digital plan examination process
- Reduces submission errors due to missing or incorrect information
- Reduces duplication of data
- Elevate the profession towards digital economy
- Saves time because data does not need to be re-entered
- Enhances the accuracy of the Cadastral database
- Provides a standard data exchange format for sharing and collaboration
- Single source of truth from SG LandXML
- informed about the developments of cadastral lots spatially and temporally

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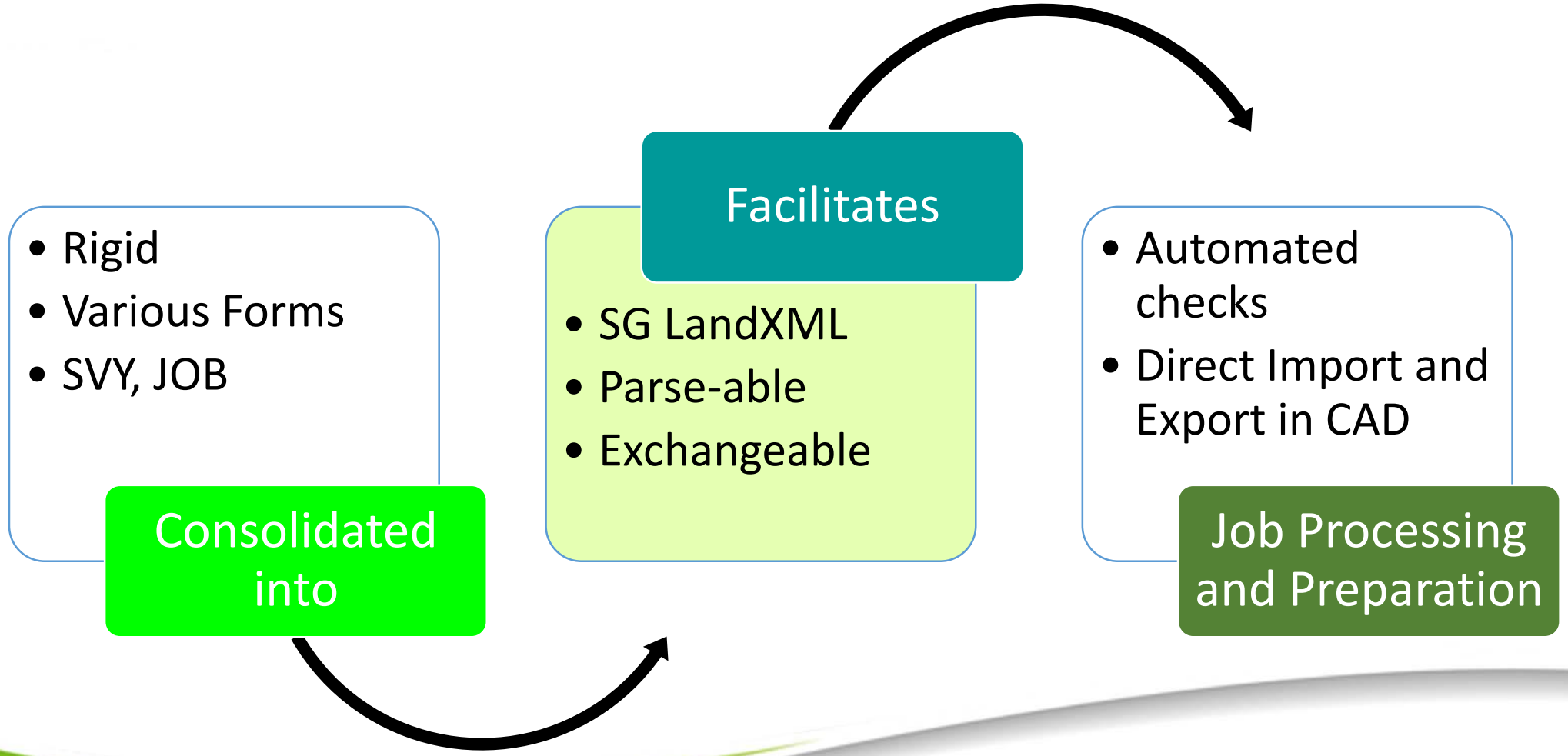
Consolidation into one Single Data File – SG LandXML



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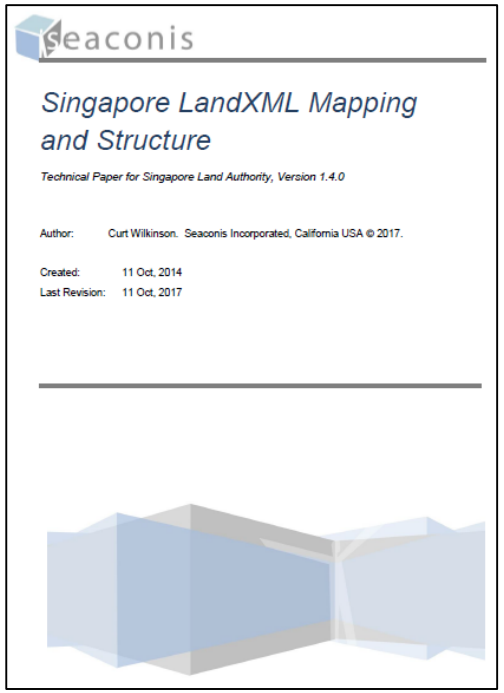
SG LandXML – fully digital and highly automated

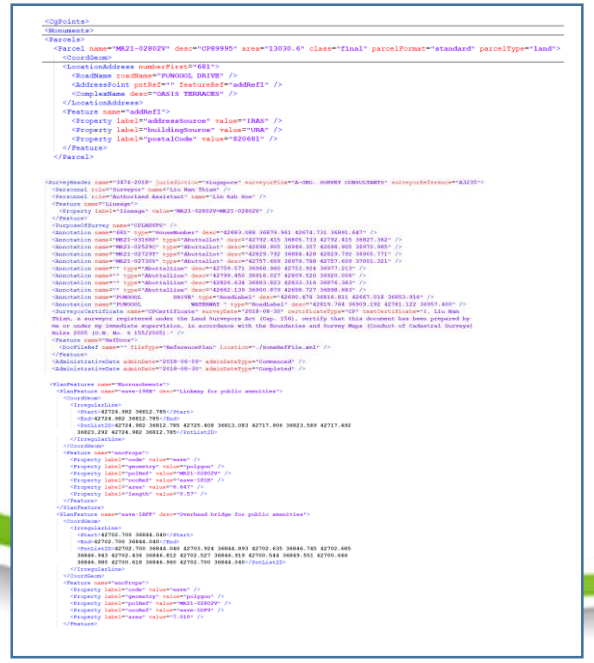
Paper Plan → Image Plan → Digital Plan (SG LandXML)

before 2004

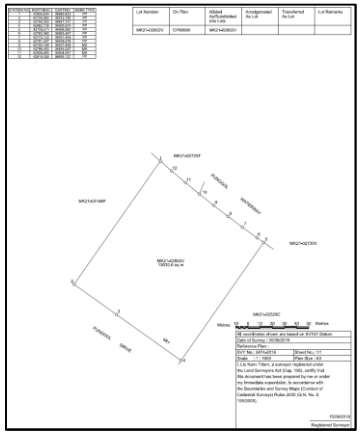
2004

Now

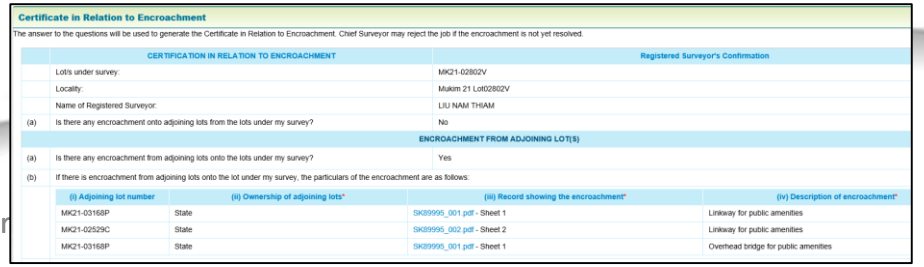




automated cadastral plan generation



automated encroachment report generation



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Common Mistakes after Launch

1. **No RS Certification** on first page of the sketch;
2. **Balance lot** not indicated in the LandXML;
3. **Old lot number** format not in LandXML;
4. **Overlapping of annotation** e.g. stn number on CP;
5. **References and Sketch Plan No.** not shown on title block. Need to insert in LandXML;
6. **Road name and adjoining lot number** not correct on CP due to wrong information inserted in LandXML;
7. **CPST** plans submitted in **colours** i.e. linework and text were in colours. (Note: CPST jobs that are cancelled, the existing CPST numbers can no longer be used)
8. **Wrong area** stated in **CPST** information file;
9. **Adjoining strata lots were included** in the CPST information file which is not needed;
10. **Wrong Purpose of Survey**;
11. **Wrong payment mode for agencies** - To check authorization of payment letter from the agencies (Note: Not able to amend the payment mode via Query & Clarification)
12. **Incorrectly indicate encroachment** from adj lot into R/S lot as 'No' but SK shows otherwise;
13. **No highlight/color edge** the encroached portion of wall;
14. **No details shown on CPST**;
15. **Submit draft descriptions via Others** not via Draft Description.
16. **Submit survey report** (not required anymore)

Refinement

1. **Submit refinement jobs** while the **lots were previously refined**;
2. **No address** for submissions;
3. **No all lot numbers** that required refinement entered.

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“lineage”

Process	Value
Subdivision	P1=P2+P3
Amalgamation	P1+P2=P3
Alteration	P1=P2
Verification	P1=P1
Allocation	NEW=P1

- Should follow the sequence of process. E.g. Subdivision then amalgamation: “P1=P2+P3+P4; P2+P3+P5=P6”
- Child lots on the right of the equation

Example: Subdivision Case

Lot	Here Subdivided Into Lots
MK28-07412N	MK28-07436P, MK28-07437T

```
<Feature name="Lineage">
        <Property label="lineage" value="MK28-07412N=MK28-07436P+MK28-07437T"/>
</Feature>
```

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“Occupations” and “Encroachments” for Encroachment Report

optional

```
<PlanFeatures name="Occupations">
<PlanFeature name="building1">
<CoordGeom>
<IrregularLine>
<Start>32888.415 21005.778</Start>
<End>32888.415 21005.778</End>
<PntList2D>32888.415 21005.778 32888.415 21005.778 32888.415 21005.778 32887.816 21000.815 32887.816 21000.815 32889.152 21000.646 32889.152 21000.646
32888.087 20991.293 32888.087 20991.293 32857.658 20994.710 32857.658 20994.710 32858.961 21006.194 32858.961 21006.194 32871.393 21004.773 32871.393
21004.773 32871.173 21002.727 32871.173 21002.727 32878.378 21001.915 32878.378 21001.915 32878.869 21006.837 32878.869 21006.837 32888.415 21005.778
</PntList2D>
</IrregularLine>
</CoordGeom>
<Feature name="occProps">
<Property label="Code" value="building"></Property>
<Property label="Geometry" value="Polygon"></Property>
<Property label="pclRef" value="MK05-09324K"></Property>
</Feature>
</PlanFeature>
</PlanFeatures>
```

owning parcel

optional

```
<PlanFeatures name="Encroachments">
<PlanFeature desc="The area enclosed by building" name="E9">
<CoordGeom>
<IrregularLine>
<Start>32888.297 21004.805</Start>
<End>32888.297 21004.805</End>
<PntList2D>32888.297 21004.805 32887.816 21000.815 32889.152 21000.646 32888.087 20991.293 32857.658 20994.710 32858.961 21006.194 32871.393 21004.773
32871.173 21002.727 32878.378 21001.915 32878.773 21005.875 32872.616 21006.567 32873.547 21014.849 32857.328 21016.694 32854.571 20992.168 32889.935
20988.194 32891.767 21004.415 32888.297 21004.805 </PntList2D>
</IrregularLine>
</CoordGeom>
<Feature name="encProps">
<Property label="Code" value="building"></Property>
<Property label="Geometry" value="Polygon"></Property>
<Property label="pclRef" value="MK05-09323V"></Property>
<Property label="occRef " value="building1"></Property>
<Property label="area" value="363.3"></Property>
<Property label="length" value="12.313"></Property>
<Property label="length" value="3.980"></Property>
</Feature>
</PlanFeature>
</PlanFeatures>
```

encroached parcel

optional

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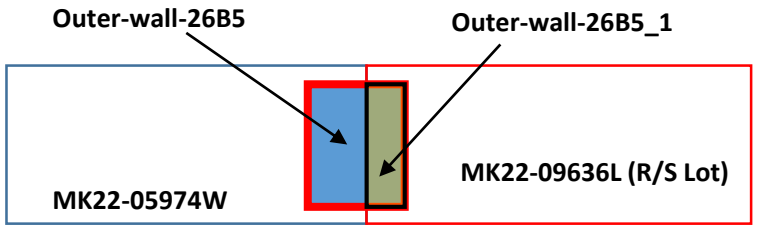
Encroachment Report (into R/S Lot)

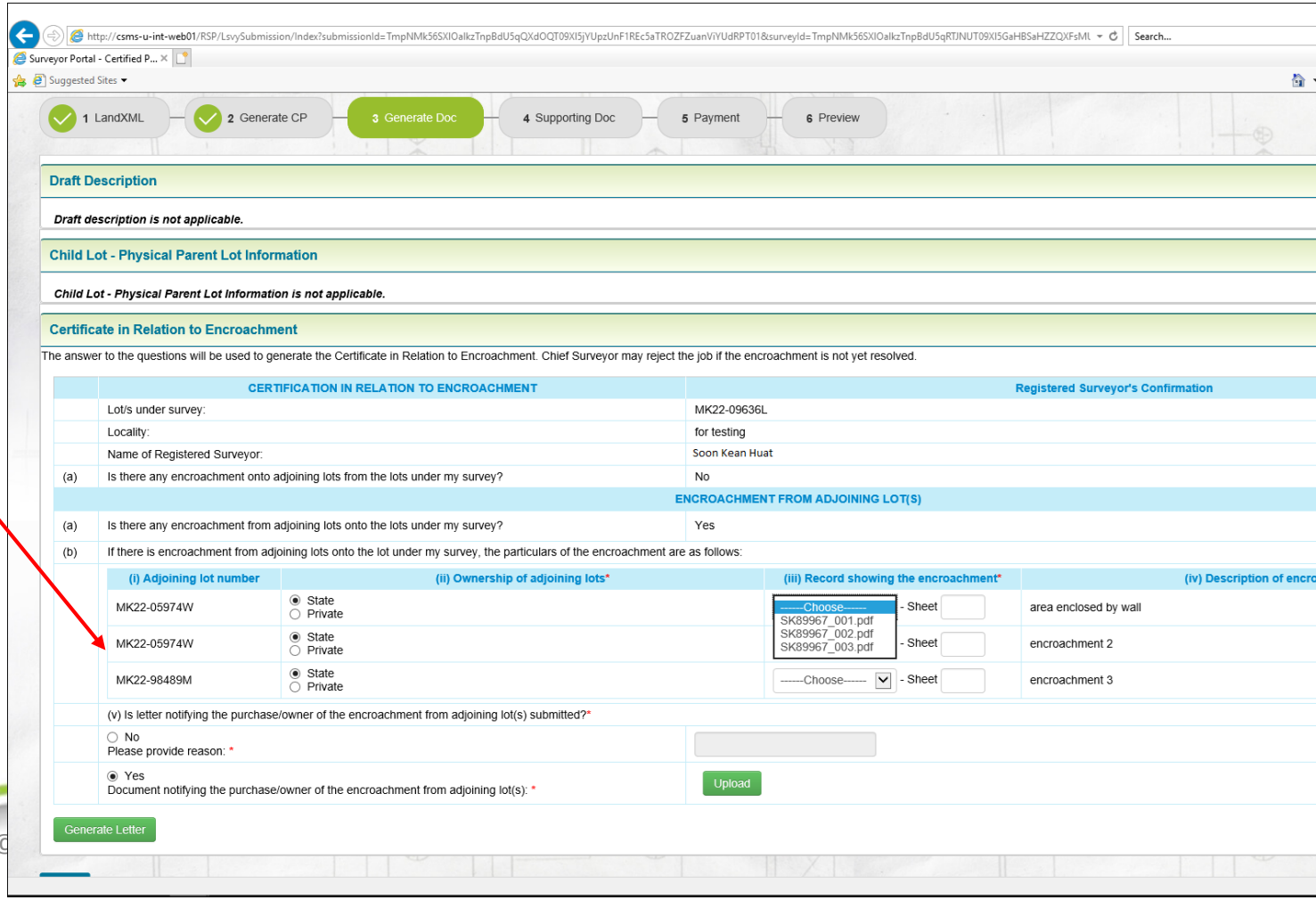
Occupational Details

```
<PlanFeature name="outer-wall-26B5" desc="Wall">
  <CoordGeom>
    <IrregularLine>
      <Start>38243.094 33301.800</Start>
      <End>38243.094 33301.800</End>
      <PntList2D>38243.094 33301.800 38253.444 33315.
      33301.776 38243.489 33301.627 38243.428 33301.5
    </IrregularLine>
  </CoordGeom>
  <Feature name="occProps">
    <Property label="code" value="outer-wall" />
    <Property label="geometry" value="polygon" />
    <Property label="pclRef" value="MK22-05974W" />
  </Feature>
</PlanFeature>
```

```
<PlanFeatures name="Encroachments">
  <PlanFeature name="outer-wall-26C5" desc="area enclosed by wall">
    <CoordGeom>
    <Feature name="encProps">
      <Property label="code" value="outer-wall" />
      <Property label="geometry" value="polygon" />
      <Property label="pclRef" value="MK22-09636L" />
      <Property label="occRef" value="column-26B1" />
      <Property label="area" value="9.221" />
      <Property label="length" value="0.157" />
    </Feature>
  </PlanFeature>
  <PlanFeature name="outer-wall-26B5_1" desc="encroa
    <CoordGeom>
    <Feature name="encProps">
      <Property label="code" value="outer-wall" />
      <Property label="geometry" value="polygon" />
      <Property label="pclRef" value="MK22-09636L" />
      <Property label="occRef" value="outer-wall-26B5" />
      <Property label="area" value="19.221" />
    </Feature>
  </PlanFeature>
    <PlanFeature name="outer-wall-26B2_1" desc="encroachment 3">
    <CoordGeom>
    <Feature name="encProps">
      <Property label="code" value="outer-wall" />
      <Property label="geometry" value="polygon" />
      <Property label="pclRef" value="MK22-09636L" />
      <Property label="occRef" value="outer-wall-26B2" />
      <Property label="area" value="10.221" />
```

Encroached into R/S lot: MK22-09636L



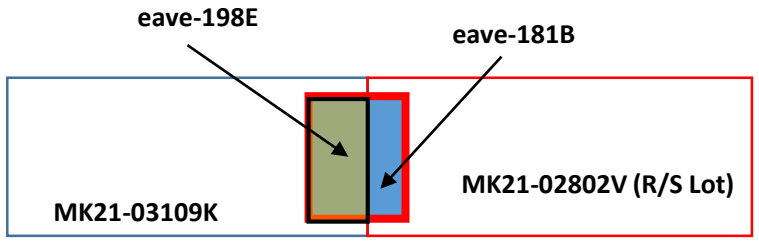


Encroachment Report (into Adjoining Lots)

Occupational Details

```
<PlanFeature name="eave-181B" desc="Linkway">
<CoordGeom><IrregularLine><Start>42715.345 36821.753
36810.713 42719.598 36815.563 42719.672 36815.822 42
</CoordGeom>
<Feature name="occProps">
    <Property label="code" value="eave"/>
    <Property label="geometry" value="polygon"/>
    <Property label="pclRef" value="MK21-02802V"/>
</Feature>
</PlanFeature>
```

R/S lot: MK21-02802V




```
<PlanFeatures name="Encroachments">
  <PlanFeature name="eave-198E" desc="Linkway for public amenities">
  <CoordGeom><IrregularLine><Start>42724.982 36812.785</Start><End>427
  36812.785</PntList2D></IrregularLine></CoordGeom>
  <Feature name="encProps">
      <Property label="code" value="eave"/>
      <Property label="geometry" value="polygon"/>
      <Property label="pclRef" value="MK21-03109K"/>
      <Property label="occRef" value="eave-181B"/>
      <Property label="area" value="7.285"/>
      <Property label="length" value="0.57"/>
  </Feature>
</PlanFeature>
```

Encroached into adjoining lot: MK21-03109K

SURVEY OF LOT 2802V *MK~~/TS~~ 21 AT safdsaf

I, a surveyor registered under the Land Surveyors Act (Cap. 156), certify that:

(a) there (* is/ ~~is no~~) encroachment affecting any land parcel adjoining the land parcel under my survey;

*(b) (if there is encroachment affecting any land parcel adjoining the land parcel under my survey) the particulars of the encroachment are as follows:

(i) Lot and * MK /~~TS~~ No. of adjoining land parcel : MK21-3109K

(ii) Ownership of adjoining land parcel : * State / ~~Private~~

(iii) The encroachment is as shown in : SK90072_001.pdf - 1

(iv) Description of encroachment : Linkway for public amenities

(v) The encroachment * ~~was~~/ was not created by the purchaser or owner of the land parcel under my survey; and

~~*(c) (if the encroachment was created by the purchaser or owner of the land parcel surveyed by me) the encroachment has been resolved and the encroachment has been resolved by :~~

Certificate in Relation to Encroachment

The answer to the questions will be used to generate the Certificate in Relation to Encroachment. Chief Surveyor may reject the job if the encroachme

	CERTIFICATION IN RELATION TO ENCROACHMENT	
	Lot/s under survey:	MK21-02802V
	Locality:	
	Name of Registered Surveyor:	
(a)	Is there any encroachment onto adjoining lots from the lots under my survey?	Yes
(b)	If there is encroachment onto adjoining lots from the lots under my survey, the particulars of the encroachment are as follows:	

(i) Adjoining lot number	(ii) Ownership of adjoining lots*
MK21-03109K	(●) State ( ) Private

	(v) Was the encroachment created by the purchaser or owner of the lot/s under my survey? *	( ) Yes (●) No
(c)	If the encroachment was created by the purchaser or owner of the lot/s under my survey, it has been resolved.	
	Resolution:*	

Required Info for Occupation and Encroachment (1/4)

Under <Occupations> and <Encroachments>, if the lot number in “pclRef” does not show in <Parcels> section, you need to create a one-liner <Parcel> element with class=“reference” (e.g. adjoining lot)

```
<PlanFeature name="outer-wall-26B5" desc="Wall">
  <CoordGeom>
    <IrregularLine>
      <Start>38243.094 33301.800</Start>
      <End>38243.094 33301.800</End>
      <PntList2D>38243.094 33301.800 38253.444 33315.
      33301.776 38243.489 33301.627 38243.428 33301.5
    </IrregularLine>
  </CoordGeom>
  <Feature name="occProps">
    <Property label="code" value="outer-wall" />
    <Property label="geometry" value="polygon" />
    <Property label="pclRef" value="MK22-05974W" />
  </Feature>
</PlanFeature>
```

```
<Parcels>
  <Parcel name="MK22-05975V" desc="CP89966" parcelType="land" parcelFormat="standard" class="reference" area="1.1"/>
  <Parcel name="MK22-05974W" desc="CP89966" parcelType="land" parcelFormat="standard" class="reference" area="1.1"/>
  <Parcel name="MK22-98489M" desc="CP89966" parcelType="land" parcelFormat="standard" class="reference" area="1.1"/>
```

Required Info for Occupation and Encroachment (2/4)

Maximum one length or area is allowed for “encProps”

4.4.7 *Encroachment Properties*

Description	A special structured Feature element to hold the properties of

Example	`<Feature name="encProps">`
	`  <Property label="code" value="fence" />`
	`  <Property label="geometry" value="polygon" />`
	`  <Property label="pclRef" value="MK18-40001B" />`
	`  <Property label="occRef" value="Fence1" />`
	`  <Property label="area" value="3.4" />`
	`</Feature>`

Parent Elements	Encroachment `PlanFeature`

Child Elements	**Cardinality**
`Property@label=“code”`	1
`Property@label=“geometry”`	1
`Property@label=“pclRef”`	0-1
`Property@label=“occRef”`	0-1
`Property@label=“area”`	0-1
`Property@label=“length”`	0-1

Required Info for Occupation and Encroachment (3/4)

If the lot number appears in “encProps” (as “pcfRef”), the lot number should NOT be appeared in “occProps” (i.e. a parcel cannot be encroached and encroaching at the same time)

```
<PlanFeature name="outer-wall-26B2_1" desc="encroachment 3">
<CoordGeom>
<Feature name="encProps">
  <Property label="code" value="outer-wall" />
  <Property label="geometry" value="polygon" />
  <Property label="pclRef" value="MK22-09636L" />
  <Property label="occRef" value="outer-wall-26B2" />
  <Property label="area" value="10.221" />
</Feature>
</PlanFeature>
```

encroachment detail

occupation detail

```
<PlanFeature name="outer-wall-26B2" desc="Wall">
  <CoordGeom>
    <IrregularLine>
      <Start>38242.619 33302.126</Start>
      <End>38242.619 33302.126</End>
      <PntList2D>38242.619 33302.126 38245.617 33299.781 38253.139 3
      33302.126</PntList2D>
    </IrregularLine>
  </CoordGeom>
  <Feature name="occProps">
    <Property label="code" value="outer-wall" />
    <Property label="geometry" value="polygon" />
    <Property label="pclRef" value="MK22-98489M" />
    <Property label="pclRef" value="MK22-09636L" /> <!-- wrong -->
  </Feature>
</PlanFeature>
```

Required Info for Occupation and Encroachment (4/4)

The feature represented as “occRef” in “encProps” should be defined as an occupation detail.

```
<PlanFeature name="outer-wall-26B5_1" desc="encroachment 2">
  <CoordGeom>
  <Feature name="encProps">
    <Property label="code" value="outer-wall" />
    <Property label="geometry" value="polygon" />
    <Property label="pclRef" value="MK22-09636L" />
    <Property label="occRef" value="outer-wall-26B5" />
    <Property label="area" value="19.221" />
  </Feature>
</PlanFeature>
```

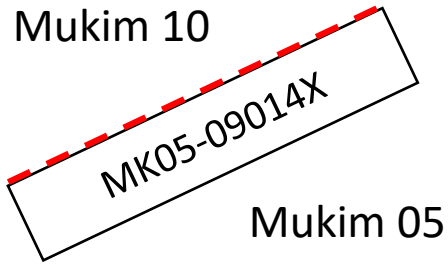
encroachment detail

occupation detail

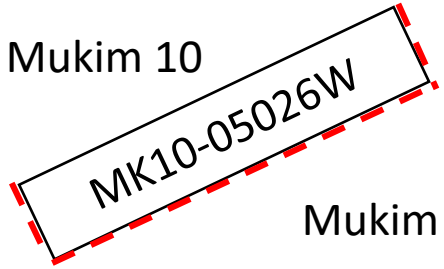
```
<PlanFeature name="outer-wall-26B5" desc="Wall">
  <CoordGeom>
    <IrregularLine>
      <Start>38243.094 33301.800</Start>
      <End>38243.094 33301.800</End>
      <PntList2D>38243.094 33301.800 38253.444 33315.
      33301.776 38243.489 33301.627 38243.428 33301.5
    </IrregularLine>
  </CoordGeom>
  <Feature name="occProps">
    <Property label="code" value="outer-wall" />
    <Property label="geometry" value="polygon" />
    <Property label="pclRef" value="MK22-05974W" />
  </Feature>
</PlanFeature>
```

Alteration of Survey District

BEFORE



AFTER




```
<Parcel parcelType="surveyDistrict" name="MK10" class="final" parcelFormat="standard">
....
</Parcel>

<Parcel parcelType="surveyDistrict" name="MK05" class="parent" parcelFormat="standard">
....
</Parcel>
```

LNLNDAOB	LN,LND,AOB	Get Lot Number	Land Lot	Alteration of MK/TS Boundary

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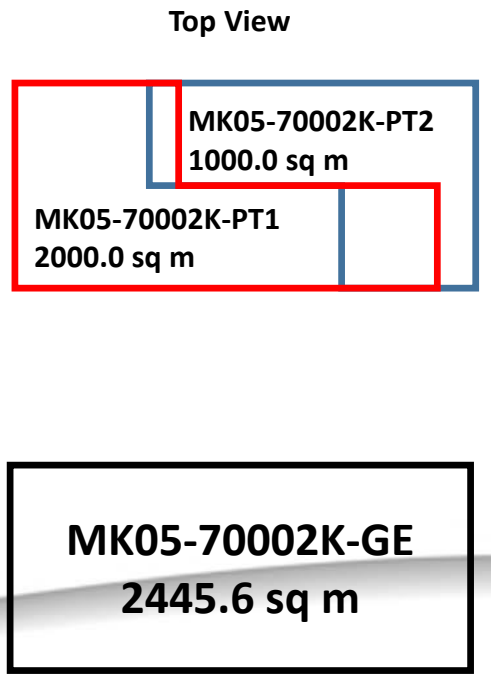
Airspace and Subterranean Lots

In the case of airspace and subterranean lots where there are multiple levels, Feature@name="Part Lot" should be added with "TotalArea"=total area of all part lots

```
<Parcel name="MK05-70002K-PT1" area="2000.0" …>
   ...
   <Feature name="PartLot">
      <Property label="TotalArea" value="3000.0"/>
   </Feature>
</Parcel>
<Parcel name="MK05-70002K-PT2" area="1000.0" …>
   ...
</Parcel>
<Parcel name="MK05-70002K-GE" area="2445.6" …>
   ...
</Parcel>
```



Balance Lot, OldFormat

```
<Feature name="Balance">
   <Property label="isBalanceLot" value="Y"/>
</Feature>
```

```
<Feature name="OldFormat">
   <Property label="oldFormatLotNumber" value="4287/U71"/>
</Feature>
```

Example for Balance Lot

```
<Parcel name="MK05-09320V" desc="CP90024" area="966.4" class="final"
parcelFormat="standard" parcelType="land">
  <CoordGeom>
    <Line>
      <Start pntRef="111" />
      <End pntRef="110" />
    </Line>
    <Line>
      <Start pntRef="110" />
      <End pntRef="107" />
    </Line>
    <Line>
      <Start pntRef="107" />
      <End pntRef="106" />
    </Line>
    <Line>
      <Start pntRef="106" />
      <End pntRef="111" />
    </Line>
  </CoordGeom>
  <Feature name="Balance">
    <Property label="isBalanceLot" value="Y" />
  </Feature>
</Parcel>
```

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Annotation

@type="AbuttalLine"

```
<Annotation type="AbuttalLine" name="" desc="33629.100 34631.591 33627.194 34621.774"/>
```

@type="AbuttalLot"

```
<Annotation type="AbuttalLot" name="MK23-06354T" desc="33716.567 34627.785"/>
```

@type="AmendmentNote"

```
<Annotation type="AmendmentNote" name="Note: Boundaries, coordinates and lot schedule of lots MK24-10896C, MK12-10854V amended by me on 19.04.2017"
desc="33669.317 34618.715 33716.567 34627.785"/>
```

@type="Disclaimer"

```
<Annotation name="Line 1" type="Disclaimer" desc="Coordinates provided by the Chief Surveyor must be verified on site by a
Registered Surveyor before adoption for use." />
<Annotation name="Line 2" type="Disclaimer" desc="If the verification results are technically inadequate,  please refer to CS's
office." />
```

@type="HouseNumber"

```
<Annotation type="HouseNumber" name="55" desc="32869.664 21089.915" />
```

@type="HWMNote"

```
<Annotation type="HWMNote" name="H.W.M." desc="33669.317 34618.715 33716.567 34627.785"/>
```

@type="OccupationNote"

```
<Annotation type="OccupationNote" name="No details along boundary line" desc="33669.317 34618.715 33716.567 34627.785"/>
```

@type="ParcelNote"

```
<Annotation type="ParcelNote" name="n1" desc="Allocated For Reclaimed Land" pclRef="MK07-04606X"/>
```

@type="PlanNote"

```
<Annotation type="PlanNote" name="1. The common property extends to those parts indicated on the plans annexed hereto."
desc="33629.100 34631.591 33627.194 34621.774"/>
```

@type="RoadLabel"

```
<Annotation type="RoadLabel" name="TUAS SOUTH BOULEVARD" desc="26292.012 3635.034 26733.526 3635.505"/>
```

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Title Block

```
<Feature name="RefDocs">
  <DocFileRef name="Approved Plan (32A) in SLA/LPB/52.12.4-v9" fileType="ReferencePlan" location="."></DocFileRef>
</Feature>
```

```
<SurveyorCertificate name="Cert1" certificateType="CP" textCertificate="I, Thomas Law Ah Weng, a surveyor registered under the Land Surveyors Act
(Cap. 156), certify that this document has been prepared by me or under my immediate supervision, in accordance with the Boundaries and Survey Maps
(Conduct of Cadastral Surveys) Rules 2005 (G.N. No. S 155/2005)." surveyDate="2017-09-12"/>
```

Generated through Online Plan Generation

All Coordinates shown are based on SVY21 Datum	
Date of Survey: 12/09/2017	
Reference Plan: Approved Plan (32A) in SLA/LPB/52.12.4-v9	
SVY No.:3849-2017	Sheet No.:1/1
Scale : 1:1000	Plan Size :A3

I, Thomas Law Ah Weng, a surveyor registered under the Land Surveyors Act (Cap. 156), certify that this document has been prepared by me or under my immediate supervision, in accordance with the Boundaries and Survey Maps (Conduct of Cadastral Surveys) Rules 2005 (G.N. No. S 155/2005).

12/09/2017

Registered Surveyor
(Digitally signed)

N	Approved Soh Kheng Peng Chief Surveyor (Digitaly Signed)

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Sketch Plan No

```
<Feature name="RefDocs">
    <DocFileRef name="Plan WPP1 ES20170122R0182.ent;    Sketch Plan No. SK100340-001 to SK100340-002" fileType="ReferencePlan" location=""/>
</Feature>
```

All Coordinates shown are based on SVY21 Datum
Date of Survey: 05/03/2017
Reference Plan: Plan WPP1 ES20170122R0182.ent
Sketch Plan No. SK100340-001 to SK100340-002
SVY No.:0952-2017 | Sheet No.:1/1
Scale : 1:200 | Plan Size :A3
I, Name , a surveyor registered under the Land Surveyors Act (Cap. 156), certify that this document has been prepared by me or under my immediate supervision, in accordance with the Boundaries and Survey Maps (Conduct of Cadastral Surveys) Rules 2005 (G.N. No. S 155/2005).
29/11/2017
Registered Surveyor
(Digitally signed)
N
Approved
Soh Kheng Peng
Chief Surveyor
(Digitaly Signed)
CP100340

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Purpose of Survey

LNLNDLAM	LN,LND,LAM	Get Lot Number	Land Lot	Land Allocation for Ministri
LNLNDONR	LN,LND,ONR	Get Lot Number	Land Lot	Owner's requests
LNLNDBUS	LN,LND,BUS	Get Lot Number	Land Lot	Blocking up survey
LNLNDVFS	LN,LND,VFS	Get Lot Number	Land Lot	Verification survey
LNLNDALN	LN,LND,ALN	Get Lot Number	Land Lot	Alienation
LNLNDAPP	LN,LND,APP	Get Lot Number	Land Lot	Approved plan
LNLNDAOB	LN,LND,AOB	Get Lot Number	Land Lot	Alteration of MK/TS Bound
LNLNDPOL	LN,LND,POL	Get Lot Number	Land Lot	Proclamation of Land
LNLNDRDC	LN,LND,RDC	Get Lot Number	Land Lot	Road Declaration
LNLNDAQN	LN,LND,AQN	Get Lot Number	Land Lot	Acquisition
LNLNDRLM	LN,LND,RLM	Get Lot Number	Land Lot	Return of Land from Minist
SNPTERSD	SN,PTE,RSD	Get Lot Number	Strata Private	Residential Development
SNPTEIDS	SN,PTE,IDS	Get Lot Number	Strata Private	Industrial
SNPTEMDM	SN,PTE,MDM	Get Lot Number	Strata Private	Mixed Development
SNPTECMC	SN,PTE,CMC	Get Lot Number	Strata Private	Commercial
SNPTECHS	SN,PTE,CHS	Get Lot Number	Strata Private	Cluster Housing
SNPTESTL	SN,PTE,STL	Get Lot Number	Strata Private	Strata Lease
SNPTESDV	SN,PTE,SDV	Get Lot Number	Strata Private	Subdivision existing strata l
SNPTEAML	SN,PTE,AML	Get Lot Number	Strata Private	Amalgamation existing stra
SNPTERSV	SN,PTE,RSV	Get Lot Number	Strata Private	Resurvey existing strata lot
SNPTEPDV	SN,PTE,PDV	Get Lot Number	Strata Private	Phase Development
SNHDBNHD	SN,HDB,NHD	Get Lot Number	Strata HDB	HDB Development
SNHDBRSV	SN,HDB,RSV	Get Lot Number	Strata HDB	Resurvey of HDB strata lots
SNHDBRCA	SN,HDB,RCA	Get Lot Number	Strata HDB	Recess area
SNHDBAML	SN,HDB,AML	Get Lot Number	Strata HDB	Amalgamation of Adjoining
SNHDBSAI	SN,HDB,SAI	Get Lot Number	Strata HDB	Space Adding Item
SNHDBHUD	SN,HDB,HUD	Get Lot Number	Strata HDB	Privatization of HUDC
SNHDBSDV	SN,HDB,SDV	Get Lot Number	Strata HDB	Subdivision of existing HDB
ACLNDLAM	AC,LND,LAM	Activation	Land Lot	Land Allocation for Ministri
ACLNDONR	AC,LND,ONR	Activation	Land Lot	Owner's requests
ACLNDBUS	AC,LND,BUS	Activation	Land Lot	Blocking up survey
ACLNDVFS	AC,LND,VFS	Activation	Land Lot	Verification survey
ACLNDALN	AC,LND,ALN	Activation	Land Lot	Alienation
ACLNDAPP	AC,LND,APP	Activation	Land Lot	Approved plan
ACLNDAOB	AC,LND,AOB	Activation	Land Lot	Alteration of MK/TS Boundary
ACLNDPOL	AC,LND,POL	Activation	Land Lot	Proclamation of Land
ACLNDRDC	AC,LND,RDC	Activation	Land Lot	Road Declaration
ACLNDAQN	AC,LND,AQN	Activation	Land Lot	Acquisition
ACLNDRLM	AC,LND,RLM	Activation	Land Lot	Return of Land from Ministries
SAPTERSD	SA,PTE,RSD	Activation	Strata Private	Residential Development
SAPTEIDS	SA,PTE,IDS	Activation	Strata Private	Industrial
SAPTEMDM	SA,PTE,MDM	Activation	Strata Private	Mixed Development
SAPTECMC	SA,PTE,CMC	Activation	Strata Private	Commercial
SAPTECHS	SA,PTE,CHS	Activation	Strata Private	Cluster Housing
SAPTESTL	SA,PTE,STL	Activation	Strata Private	Strata Lease
SAPTESDV	SA,PTE,SDV	Activation	Strata Private	Subdivision existing strata lots
SAPTEAML	SA,PTE,AML	Activation	Strata Private	Amalgamation existing strata lots
SAPTERSV	SA,PTE,RSV	Activation	Strata Private	Resurvey existing strata lots
SAPTEPDV	SA,PTE,PDV	Activation	Strata Private	Phase Development
SAHDBNHD	SA,HDB,NHD	Activation	Strata HDB	New HDB Development
SAHDBRSV	SA,HDB,RSV	Activation	Strata HDB	Resurvey of HDB strata lots
SAHDBRCA	SA,HDB,RCA	Activation	Strata HDB	Recess area
SAHDBAML	SA,HDB,AML	Activation	Strata HDB	Amalgamation of Adjoining lots
SAHDBSAI	SA,HDB,SAI	Activation	Strata HDB	Space Adding Item
SAHDBHUD	SA,HDB,HUD	Activation	Strata HDB	Privatization of HUDC
SAHDBSDV	SA,HDB,SDV	Activation	Strata HDB	Subdivision of existing HDB block
RTLNDPOL	RT,LND,POL	Registration of Tile Plan	Land Lot	Proclamation of Land
RTLNDALN	RT,LND,ALN	Registration of Tile Plan	Land Lot	Alienation
CPLNDLAM	CP,LND,LAM	Certified Plan	Land Lot	Land Allocation for Ministries
CPLNDONR	CP,LND,ONR	Certified Plan	Land Lot	Owner's requests
CPLNDBUS	CP,LND,BUS	Certified Plan	Land Lot	Blocking up survey
CPLNDVFS	CP,LND,VFS	Certified Plan	Land Lot	Verification survey
CPLNDALN	CP,LND,ALN	Certified Plan	Land Lot	Alienation
CPLNDAPP	CP,LND,APP	Certified Plan	Land Lot	Approved plan
CPLNDAOB	CP,LND,AOB	Certified Plan	Land Lot	Alteration of MK/TS Boundary
CPLNDPOL	CP,LND,POL	Certified Plan	Land Lot	Proclamation of Land
CPLNDRDC	CP,LND,RDC	Certified Plan	Land Lot	Road Declaration
CPLNDAQN	CP,LND,AQN	Certified Plan	Land Lot	Acquisition
CPLNDRLM	CP,LND,RLM	Certified Plan	Land Lot	Return of Land from Ministries
STPTERSD	ST,PTE,RSD	Strata Certified Plan	Strata Private	Residential Development
STPTEIDS	ST,PTE,IDS	Strata Certified Plan	Strata Private	Industrial
STPTEMDM	ST,PTE,MDM	Strata Certified Plan	Strata Private	Mixed Development
STPTECMC	ST,PTE,CMC	Strata Certified Plan	Strata Private	Commercial
STPTECHS	ST,PTE,CHS	Strata Certified Plan	Strata Private	Cluster Housing
STPTESTL	ST,PTE,STL	Strata Certified Plan	Strata Private	Strata Lease
STPTESDV	ST,PTE,SDV	Strata Certified Plan	Strata Private	Subdivision existing strata lots
STPTEAML	ST,PTE,AML	Strata Certified Plan	Strata Private	Amalgamation existing strata lots
STPTERSV	ST,PTE,RSV	Strata Certified Plan	Strata Private	Resurvey existing strata lots
STPTEPDV	ST,PTE,PDV	Strata Certified Plan	Strata Private	Phase Development
STHDBNHD	ST,HDB,NHD	Strata Certified Plan	Strata HDB	New HDB Development
STHDBRSV	ST,HDB,RSV	Strata Certified Plan	Strata HDB	Resurvey of HDB strata lots
STHDBRCA	ST,HDB,RCA	Strata Certified Plan	Strata HDB	Recess area
STHDBAML	ST,HDB,AML	Strata Certified Plan	Strata HDB	Amalgamation of Adjoining lots
STHDBSAI	ST,HDB,SAI	Strata Certified Plan	Strata HDB	Space Adding Item
STHDBHUD	ST,HDB,HUD	Strata Certified Plan	Strata HDB	Privatization of HUDC
STHDBSDV	ST,HDB,SDV	Strata Certified Plan	Strata HDB	Subdivision of existing HDB block
LCPTEMDM	LC,PTE,MDM	Strata Certified Plan (LCP)	Strata Private	Subdivision of existing HDB block
RFLNDFDM	RF,LND,FDM	Refinement	Land Lot	Refinement of Land lot found marks.
GSCPSHCP	GS,CPS,HCP	GNSS Observations	Control Point	Horizontal Control Point
GSCPSVCP	GS,CPS,VCP	GNSS Observations	Control Point	Vertical Control Point

```
<PurposeOfSurvey name="CPLNDAPP"/>
```

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Purpose of Survey from SLA Web Site

SLA
SINGAPORE LAND AUTHORITY

Purpose Of Survey

The purpSurvType code is a concatenation of three separate codes. Each enumeration item is a specific meaningful permutation (order matters) of the three codes, and not all permutations are allowed. The format is a two-letter code followed by two three-letter codes.

The first code relates to the process, of "phase" of the project that requires approval, and therefore a specific submission. The second code relates to the general lot or land type. This is not the parcelType, but it is close. The third is the "survey" type, which categorizes a survey approach for specific purposes.

purpSurvType	Lot Type	Job Type	Examples
LNLNDLAM	Land Lot	Land Allocation for Ministries	Land Allocation for Ministries (includes Stat Boards) 1) Notification of Title Survey for Allocation of State Land to MCCY 2) Allocated to MOE for
LNLNDONR	Land Lot	Owner's requests	Amalgamation of lots (Priv
LNLNDBUS	Land Lot	Blocking up survey	Blocking up of large parcel
LNLNDVFS	Land Lot	Verification survey	Resurvey of land lot requir a) single land lot under sal b) strata subdivision where c) modernisation of land lo
LNLNDALN	Land Lot	Alienation	1) Notification of Title Su 2) Sale of Industrial Site 3) Survey for surrender a 4) Subterranean lot 5) Airspace lot 6) Foreshore structures
LNLNDAPP	Land Lot	Approved plan	Subdivision permission gra application referred to in (hereinafter called the "ap
LNLNDAOB	Land Lot	Alteration of MK/TS Boundary	Alteration of Mukim and T
LNLNDPOL	Land Lot	Proclamation of Land	Proclamation of Reclaimed
LNLNDRDC	Land Lot	Road Declaration	1) Cadastral Land Survey 2) Vesting of Road/Drain
LNLNDAQN	Land Lot	Acquisition	1) Compulsory Acquisitio 2) Compulsory Acquisitio
LNLNDRLM	Land Lot	Return of Land from Ministries	1) Return of Land from M
			2) Proposed Return of JTC, SportSG and PUB Land
SNPTERSD	Strata Private	Residential Development	Strata Subdivision of the existing housing development into 118 separate residential strata units
SNPTEIDS	Strata Private	Industrial	Proposed erection of a multiple-user light Industrial factory building (total 229 factory units)
SNPTEMDM	Strata Private	Mixed Development	Proposed Strata Subdivision into 744 separate residential strata units and 3 separate commercial strata units
SNPTECMC	Strata Private	Commercial	Strata Subdivision of commercial development into 167 separate strata units with 25 accessory lots
SNPTECHS	Strata Private	Cluster Housing	1) Strata survey of buildings in Cluster Housing 2) Approved cluster housing developments may contain detached (bungalow), semidetached and terrace houses.
SNPTESTL	Strata Private	Strata Lease	1) Excision of strata lots for strata leases 2) Registration of strata leases exceeding 7 years but not more than 21 years without sub-divisional approval
SNPTESDV	Strata Private	Subdivision existing strata lots	Subdivision of existing strata lot or strata provisional lot
SNPTEAML	Strata Private	Amalgamation existing strata lots	Amalgamation of existing strata lot and or common property
SNPTERSV	Strata Private	Resurvey existing strata lots	Resurvey of existing strata lot (Private)
SNPTEPDV	Strata Private	Phase Development	Phase Development
SNHDBNHD	Strata HDB	HDB Development	Proposed Strata Subdivision of the existing public housing development into 652 separate residential strata units
SNHDBRSV	Strata HDB	Resurvey of HDB strata lots	Resurvey of existing strata lot (HDB)
SNHDBRCA	Strata HDB	Recess area	HDB recess area
SNHDBAML	Strata HDB	Amalgamation of Adjoining lots	Amalgamation of adjoining flats
SNHDBSAI	Strata HDB	Space Adding Item	HDB Space Added Item (SAI)
SNHDBHUD	Strata HDB	Privatization of HUDC	Privatization of HUDC
SNHDBSDV	Strata HDB	Subdivision of existing HDB block	Subdivision of existing HDB block (eg. For shops)

Notes: *1) Purpose of Survey for Activation (Land and Strata), CP and CPST jobs are similar to the above list.*
2) Purpose of Survey for RT, LCP, Refinement and GNSS are self-explanatory.
3) The examples may not be comprehensive for every job type.

https://www.sla.gov.sg/Press-Room/Circulars/Land-Survey

Verification of Survey

- GLN not required, proceed with CP submission
- “On plan” column – new CP number

Lot Number	On Plan	Allotted As/Subdivided Into Lots	Amalgamated As Lot	Transferred As Lot	Lot Remarks
MK21-02802V	CP90072	MK21-02802V			Last Approved on CP12345

```
<Feature name="Lineage">
    <Property label="lineage" value="MK21-02802V=MK21-02802V"/>
</Feature>
<PurposeOfSurvey name="CPLNDVFS"/>
<Annotation type="ParcelNote" name="remark1" desc="Last Approved on CP12345" pclRef="MK21-02802V"/>
```

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GNSS Submission: latitude, longitude, type, commenced, completed

= ddd mm ss.sssss (e.g. 1 deg 1 min 1.23456 sec = “1.010123456”)

```
<CgPoints>
    <CgPoint name="1" desc="final" code="L01" latitude="1.231001188" longitude="103.501089639" ellipsoidHeight="31.974" pntSurv="control">
    40895.005 28338.483</CgPoint>
    <CgPoint name="2" desc="final" code="L01" latitude="1.230243483" longitude="103.501345565" ellipsoidHeight="32.660" pntSurv="control">
    40662.274 28417.598</CgPoint>
</CgPoints>
<Monuments>
    <Monument name="SM19459" pntRef="1" type="NL" state="new" featureRef="1" desc="LENTOR LOOP (NEAR LP 3)"/>
    <Monument name="SM19460" pntRef="2" type="NL" state="new" featureRef="2" desc="LENTOR DRIVE / YIO CHU KANG ROAD (LP 377/1F)"/>
    <Feature name="1">
        <Property label="Remarks" value="ISN 16335 LOST"/>
    </Feature>
    <Feature name="2">
        <Property label="Remarks" value="ISN 00580 LOST"/>
    </Feature>
</Monuments>
<Survey>
    <SurveyHeader name="3540-2018" jurisdiction="Singapore" surveyorFirm="XXX">
        <Personnel role="Surveyor" name="XXX"/>
        <Personnel role="Authorised Assistant" name="XXX" />
        <AdministrativeDate adminDateType="Commenced" adminDate="2018-08-25" />
        <AdministrativeDate adminDateType="Completed" adminDate="2018-08-27" />
    </SurveyHeader>
</Survey>
```

Attribute	Type	Description	Enumerations	Definition
type	monumentType	This is a survey mark	CM	Concrete Marker
			SP	Spike
			NL	Nail
			SM	ISN Marker
			MK	Cut Mark
			PP	Pipe
			OT	Others
			UM	Not Marked
			TM	Temp mark, peg
			BT	Bolt

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<LocationAddress>

Updating Address for Land/Strata/Accessory Lot (Not Applicable for Activation of Caveat Lot Stage)								
Lot_Number	House_Number	Street_Name	Level_Number	Unit_Number	Postal_Code	Address_Source	Building_Name	Building_Source

```
<Parcel ...="">
   <LocationAddress
      flatNumber="02"
      floorLevelNumber="05"
      numberFirst="35">
      <ComplexName desc="Wedge Mount Industrial Building"/>
      <RoadName roadName="Jalan Pemimpin"/>
      <AddressPoint pntRef="no" featureRef="addRef1"/>
   </LocationAddress>
   <Feature name="addRef1">
      <Property label="addressSource" value="IRAS"/>
      <Property label="buildingSource" value="URA"/>
      <Property label="postalcode" value="577176"/>
   </Feature>
   ...
</Parcel>
```

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CGPoint@desc, CGPoint@pntSurv

```
<CgPoints>
   <CgPoint name="3" desc="final" code="L01" pntSurv="traverse">
      29568.716 30286.225
   </CgPoint>
   ...
   <CgPoint name="24" desc="final" code="L01" pntSurv="control">
      29568.716 30286.225 101.5
   </CgPoint>
</CgPoints>
```

desc	approvalStateType	The SLA class related to official status of the point.	allocation activation RT final dead	allocation activation Registration of Title final dead – historic.

pntSurv	survPntType	The function the point serves in the survey.	traverse reference administrative control boundary monument (NA) sideshot (NA) natural boundary (NA)

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CGPoint@code

```
<CgPoints>
   <CgPoint name="3" desc="final" code="L01" pntSurv="traverse">
      29568.716 30286.225
   </CgPoint>
   ...
   <CgPoint name="24" desc="final" code="L01" pntSurv="control">
      29568.716 30286.225 101.5
   </CgPoint>
</CgPoints>
```

code	methodType	A combined methods categorisation. L – land H – high water mark F – foreshore S – strata V – void A – accessory 01 – surveyed, and demarcated under SVY21 datum. 02 – refined, points that are refined but not surveyed and demarcated under SVY21 datum. 03 – unknown, unrefined and surveyed under Cassini datum.	L01 L02 L03 H01 H02 H03 F01 F02 F03 S01 S02 S03 V01 V02 V03 A01 A02 A03	

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Monument@type, Monument@state

```
<Monuments>
  <Monument name="1" pntRef="201" type="SP" state="found" />
  <Monument name="2" pntRef="202" type="NL" state="found" />
</Monuments>
```

type	monumentType	This is a survey mark	CM SP NL SM MK PP OT UM TM BT	Concrete Marker Spike Nail ISN Marker Cut Mark Pipe Others Not Marked Temp mark, peg Bolt
state	monumentState	state of physical monument	unmarked found refixed new compiled	no mark P.O. marks original lost, replaced new mark placed from records

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Parcel@parcelFormat

```
<Parcel name="MK21-02622M" desc="CP86594" area="2000.0" class="reference" parcelFormat="standard" parcelType="land">
  <CoordGeom>
    <Line>
      <Start pntRef="127" />
      <End pntRef="128" />
    </Line>
    <Line>
      <Start pntRef="128" />
      <End pntRef="96" />
    </Line>
    <Line>
      <Start pntRef="96" />
      <End pntRef="95" />
    </Line>
    <Line>
      <Start pntRef="95" />
      <End pntRef="127" />
    </Line>
  </CoordGeom>
</Parcel>
```

parcelFormat	parcelFormat	format of geometry description	standard	2D land ~~or 2D strata~~
			surface	surface in 3D
			multisurface	patches in 3D
			extruded	2D with lower and upper elevations
			volume	3D Volume

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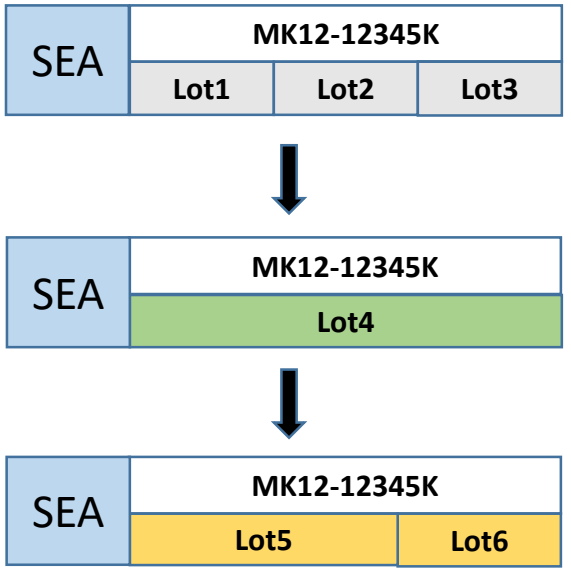
Parcel@class

```
<Parcel name="MK21-02622M" desc="CP86594" area="2000.0" class="reference" parcelFormat="standard" parcelType="land">
  <CoordGeom>
    <Line>
      <Start pntRef="127" />
      <End pntRef="128" />
    </Line>
    <Line>
      <Start pntRef="128" />
      <End pntRef="96" />
    </Line>
    <Line>
      <Start pntRef="96" />
      <End pntRef="95" />
    </Line>
    <Line>
      <Start pntRef="95" />
      <End pntRef="127" />
    </Line>
  </CoordGeom>
</Parcel>
```



class	parcelClass	state or role in the survey		
			parent	parent of final lots
			interim	temporary lot
			final	submitted new lot
			reference	lot not in lineage or physical parent, but necessary for analysis
			~~provisional~~	Approved provisional lot to be used for analysis.
			other	Not a lot

class="parent": Lot1, Lot2, Lot3

class="interim": Lot4

class="final": Lot5, Lot6

class="reference": MK12-12345K

class="other": "SEA"

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Parcel@parcelType

```
<Parcel name="MK21-02622M" desc="CP86594" area="2000.0"
class="reference" parcelFormat="standard" parcelType="land">
  <CoordGeom>
    <Line>
      <Start pntRef="127" />
      <End pntRef="128" />
    </Line>
    <Line>
      <Start pntRef="128" />
      <End pntRef="96" />
    </Line>
    <Line>
      <Start pntRef="96" />
      <End pntRef="95" />
    </Line>
    <Line>
      <Start pntRef="95" />
      <End pntRef="127" />
    </Line>
  </CoordGeom>
</Parcel>
```

parcelType	parcelTypeType	parcel type		
			land	standard land lot
			airspace	above ground 3D
			subterranean	below ground 3D
			empty	void
			strata	within building
			accessory	related to strata
			stateReserve	restriction
			foreshore	abutting coast
			reclaimed	land reclaimed from sea or other water bodies
			strataProvisional	proposed strata lot
			surveyDistrict	survey district
			building	a building
			level	a building level
			common	common use areas
			~~typicalStorey~~	typical storey
			~~virtual~~	virtual parcel referenced by a typical storey
			~~voidSpace~~	strata void space
			voidArea	strata void area

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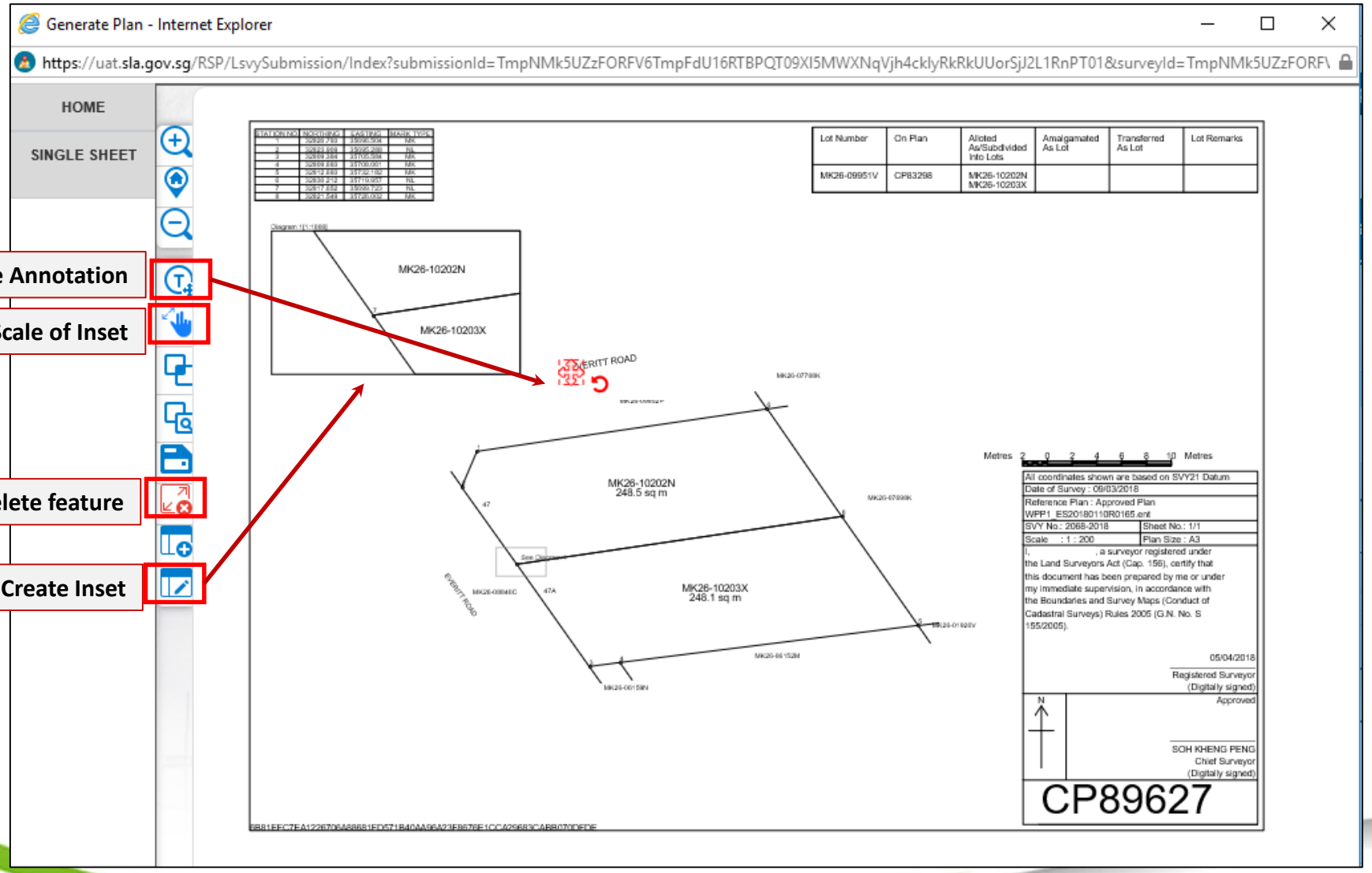
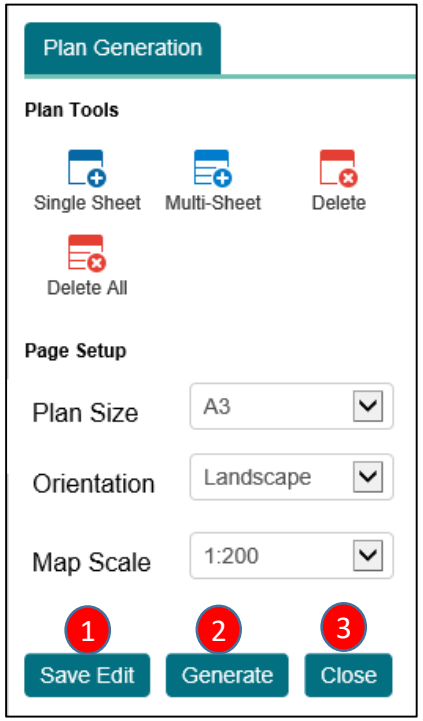
Online Plan Generation





Currently for normal land lots only. Not applicable for airspace, subterranean and strata. Plans in DXF need to be submitted instead.

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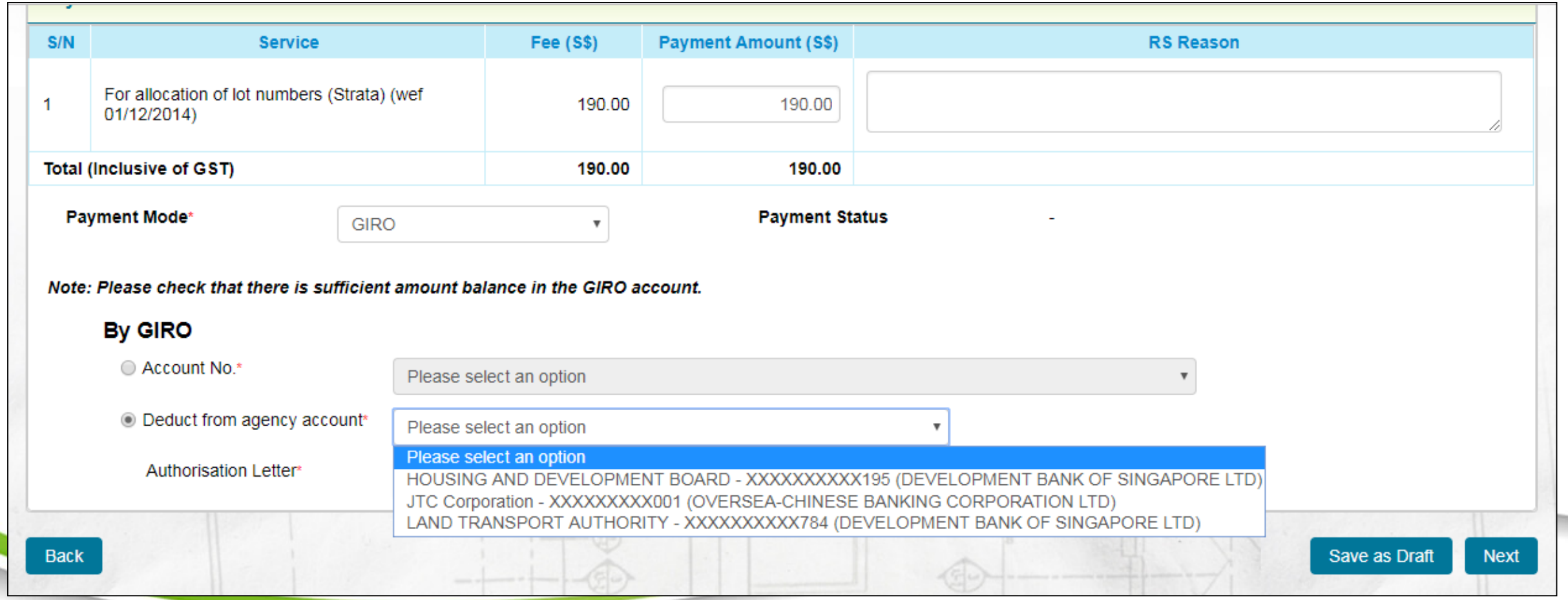
Payment

For Statutory Board Jobs, you can choose GIRO



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Assistances

To report issues encountered at RS Portal

- email: CSMSHelpdesk@ncs.com.sg
- phone: 66849838 (Mon – Fri: 0800 - 1900hrs (exclude Sat, Sunday and Public Holidays)

CSMS Clinic @ SLA

- provide 1-to-1 assistance on new submissions
- for appointment, please email:
  Ms Mitsy NG (Mitsy_Ng@sla.gov.sg)

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SG LandXML Software

- Software currently supports SG LandXML (in alphabetical order):
  - DataStream 2018 (Mr Dai)
  - GeoCadastre 2018 (GPS Lands)
  - LISTECH Neo (Mr Darren Bennett, LISTECH)

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Next

- To define occupational and encroachment details in LandXML with coordinates
- To submit detail sketch in DXF, not TIFF or PDF
- To submit Strata jobs in LandXML
- To submit airspace and subterranean jobs in 3D LandXML

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Thank You!