



# **110-2 地圖與地理資訊系統**

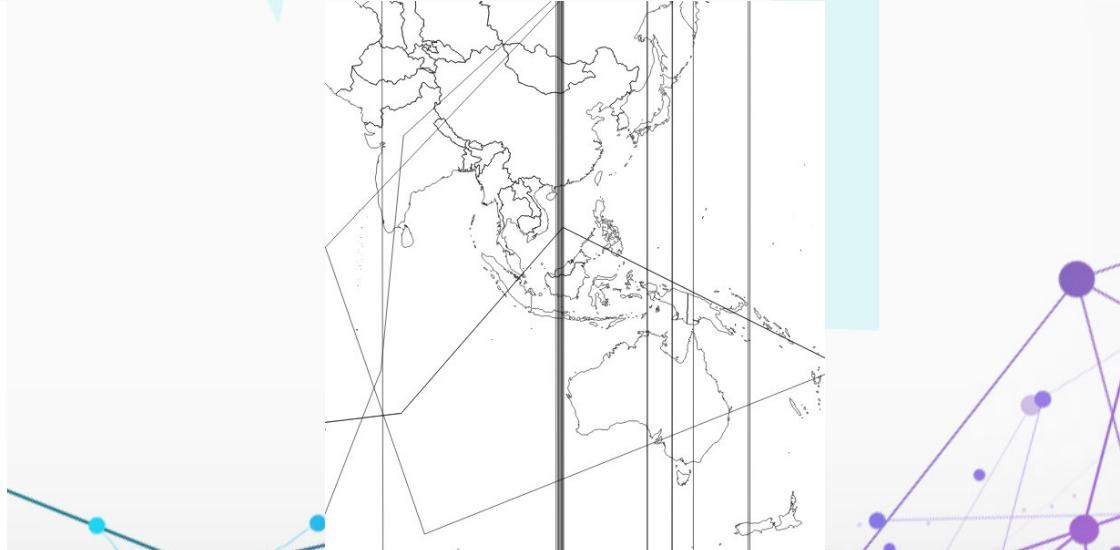
## **LAB 02**

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# Lab 1 作業

TWD97 / TM2 EPSG: 3826

以下兩圖均為「正確」，而右圖由於 QGIS 在轉換投影中央經線時，polygon 檔案格式的序位錯亂所致。  
若使用 QGIS 完成此項作業，繳交如右之圖檔，不予以扣分。



# 今日實習

## 影像資料對位與數化

### 空間對位及數化之目的：

1. 原始資料若為網格資料(如真實正射影像)，轉為向量圖層會更易於描述道路、建物等資訊。
2. 雖然現在的網格資料大多也會有坐標定義，但若沒有或遺失了，就需要將該網格資料進行空間對位，使得該資料展示於正確位置上。
3. 有助於資訊的整合和互通性，可將只有紙本地圖上有的資訊，進行數位化，讓往後在電子平台上也能夠有正確的空間參照，並能被準確判讀(e.g. 臺灣百年歷史地圖)

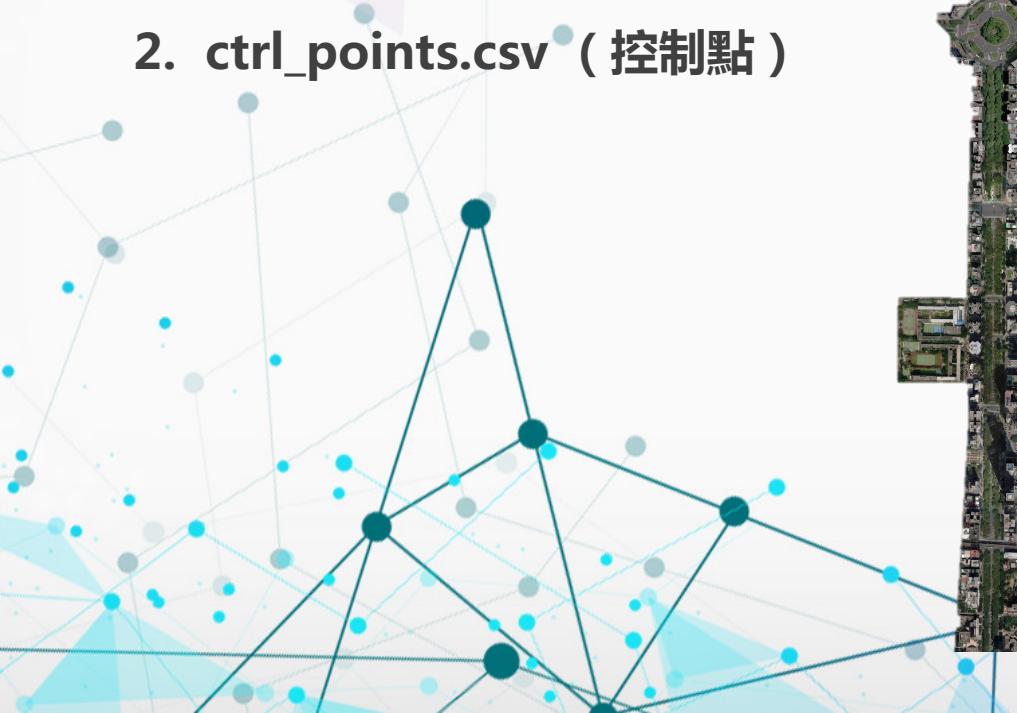
# 臺灣百年歷史地圖

<http://gissrv4.sinica.edu.tw/gis/twhgis/>

The screenshot displays two versions of a map of Taipei, Taiwan, side-by-side. The left map is a 'Spatial Query' interface with a green header bar labeled 'Menu' and '臺北市百年歷史地圖'. It features a legend for 'General', 'User', and 'Digit.' layers, and a sidebar for 'Measurement', 'Settings', and 'Help'. A detailed legend on the left lists historical maps from 1919 to 1947. The main map area shows the city's evolution from 1919 to the present day, with red and blue lines indicating historical street grids and modern infrastructure like the MRT and major roads. Key landmarks such as the Taipei Fine Arts Museum, Songshan Airport, and various temples are marked. The right map is a 'Satellite' view showing the same geographical area with satellite imagery. Both maps have a 'Google' logo at the bottom left.

# 實習使用材料

1. 104年真實正射影像.png
2. ctrl\_points.csv ( 控制點 )



	A	B	C	D
1	id	x	y	
2	0	305460.11	2770466.72	
3	1	305288.57	2770461.93	
4	2	305347.24	2770364.82	
5	3	305243.26	2770243.38	
6	4	305254.59	2770125.86	
7	5	305428.48	2769993.1	
8	6	305347.78	2769866.77	
9	7	305417.94	2769733.35	
10	8	305320.2	2769677.39	
11	9	305417.73	2769599.12	
12	10	305347.58	2769526.53	
13	11	305310.88	2769370.2	
14	12	305165.24	2769297.66	
15	13	305262.51	2769170.42	
16	14	305419.42	2769007.7	
17	15	305420.95	2768847.12	
18	16	305320.32	2768709.17	
19	17	305445.11	2768686.84	
20	18	305338.98	2768598.75	
21	19	305309.92	2768434.5	
22	20	305445.42	2768345.8	
23				

TWD97 / TM2 EPSG: 3826

# 對位與數化步驟

## 對位

務必了解其使用  
之坐標系統為何

1. 確認控制點所在位置及坐標
2. 在網格圖層上以相同位置建立這些點,並賦予已知控制點坐標
3. 執行坐標對位,並與真實的地圖/圖資作比對評估結果的好壞

## 數化

網格資料和此新增向量圖層為兩個不同的圖層

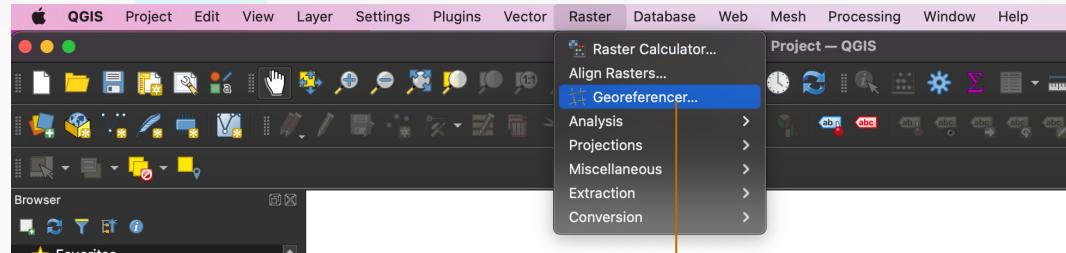
1. 新增向量圖層(點/線/面),並參考對位完成之網格資料,在此圖層上將建物輪廓描繪出來
2. 將這些建物輪廓存檔成向量資料,完成數化

# 空間對位 - STEP 1 確認控制點

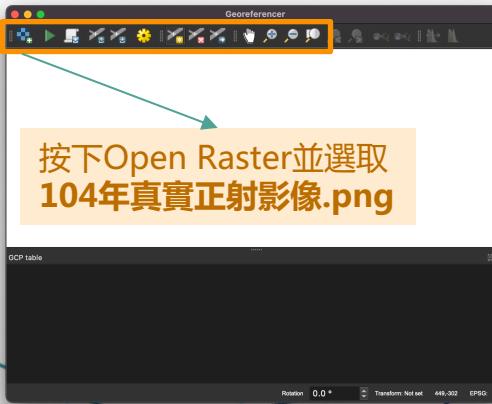


	A	B	C	D
id	x	y		
1				
2	0	305460.11	2770466.72	
3	1	305288.57	2770461.93	
4	2	305347.24	2770364.82	
5	3	305243.26	2770243.38	
6	4	305254.59	2770125.86	
7	5	305428.48	2769993.1	
8	6	305347.78	2769866.77	
9	7	305417.94	2769733.35	
10	8	305320.2	2769677.39	
11	9	305417.73	2769599.12	
12	10	305347.58	2769526.53	
13	11	305310.88	2769370.2	
14	12	305165.24	2769297.66	
15	13	305262.51	2769170.42	
16	14	305419.42	2769007.7	
17	15	305420.95	2768847.12	
18	16	305320.32	2768709.17	
19	17	305445.11	2768686.84	
20	18	305338.98	2768598.75	
21	19	305309.92	2768434.5	
22	20	305445.42	2768345.8	
23				

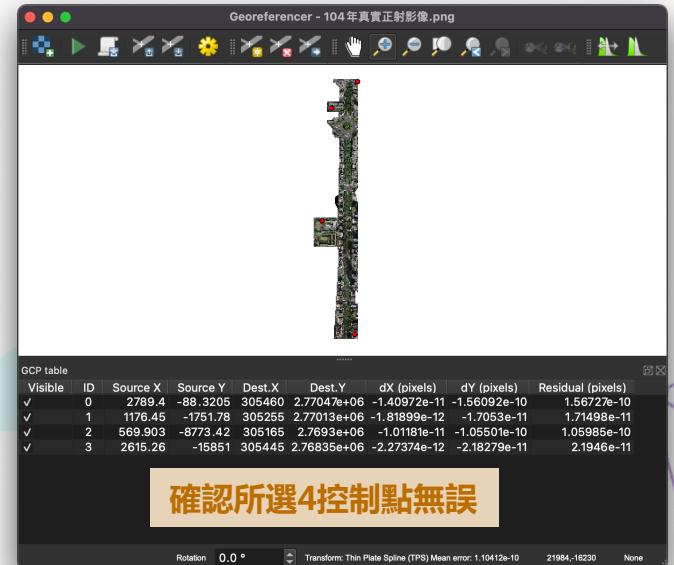
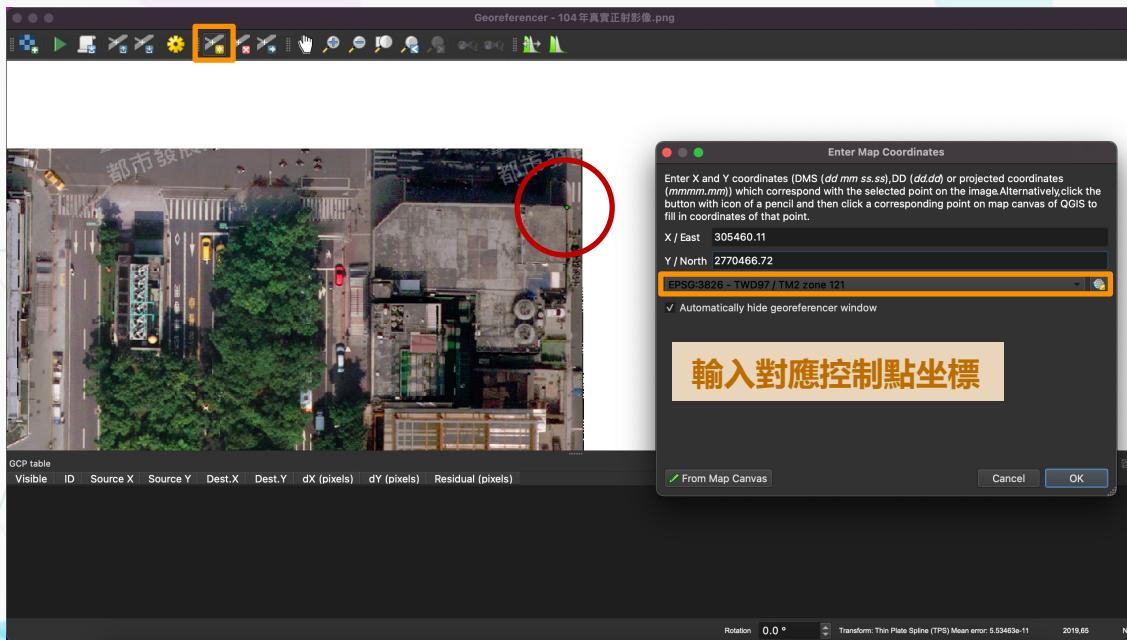
至少選擇4個控制點  
(TWD97 / TM2 EPSG: 3826)



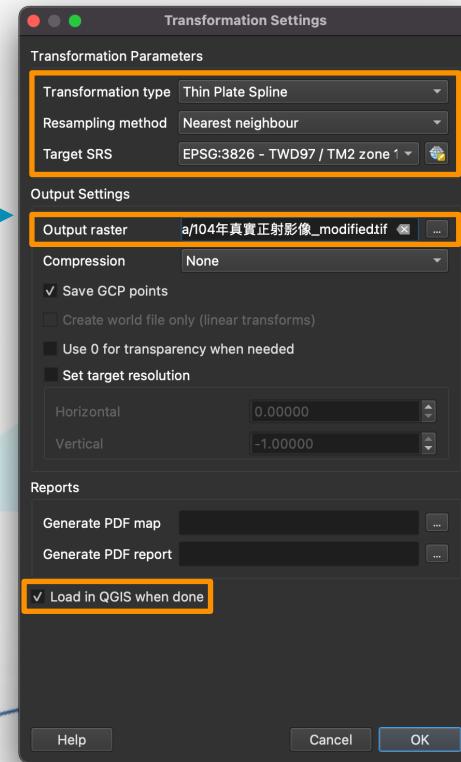
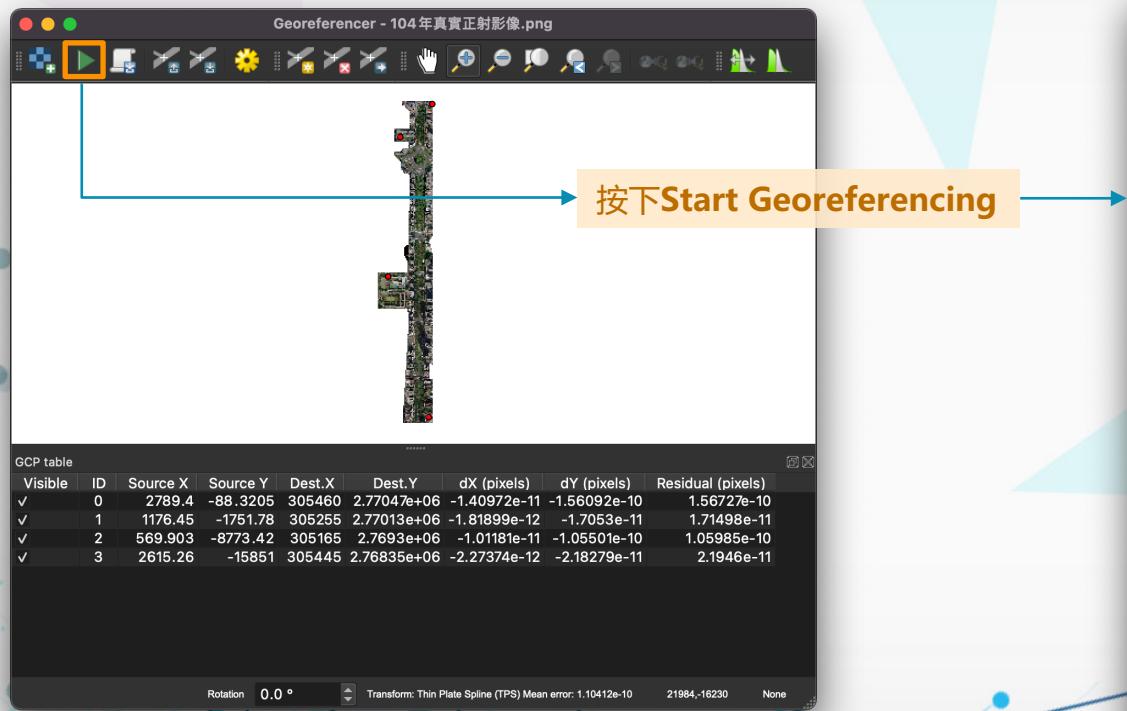
按下Open Raster並選取  
104年真實正射影像.png



# 空間對位 - STEP 2 以控制點位置及坐標建立點



# 空間對位 - STEP 3 執行坐標對位



# 空間對位 - STEP 3 檢驗對位成果



利用OSM檢視成果

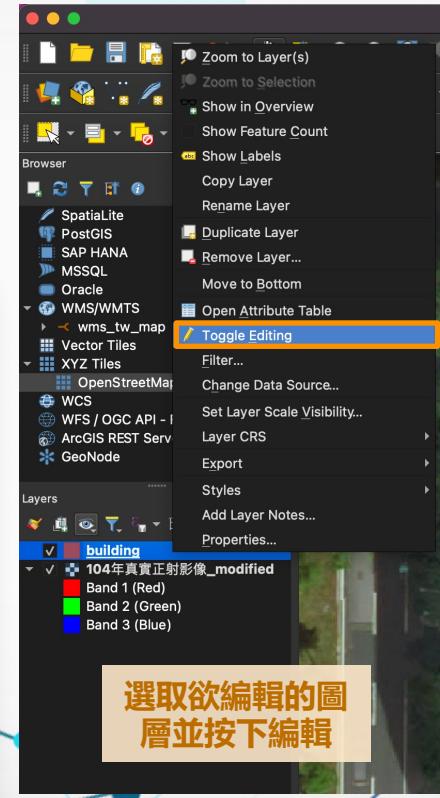
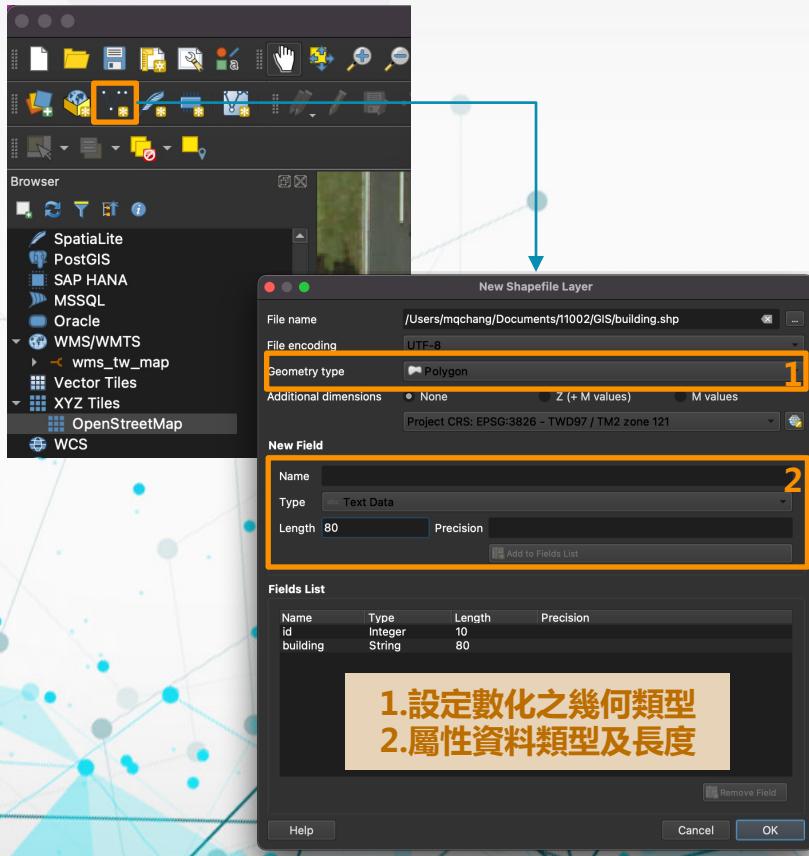


與對位成果疊加

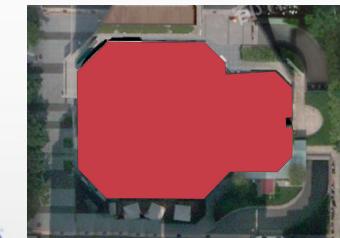
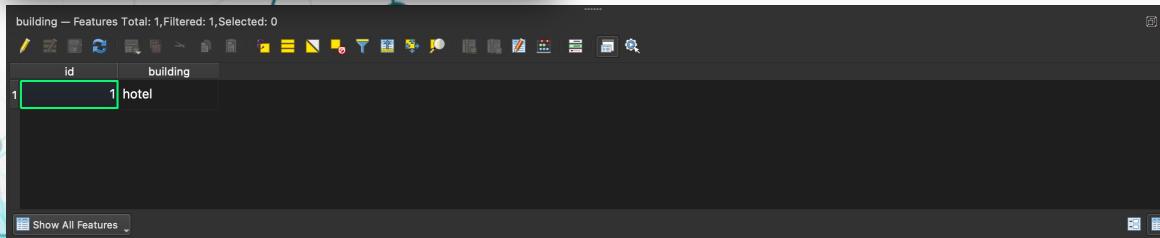
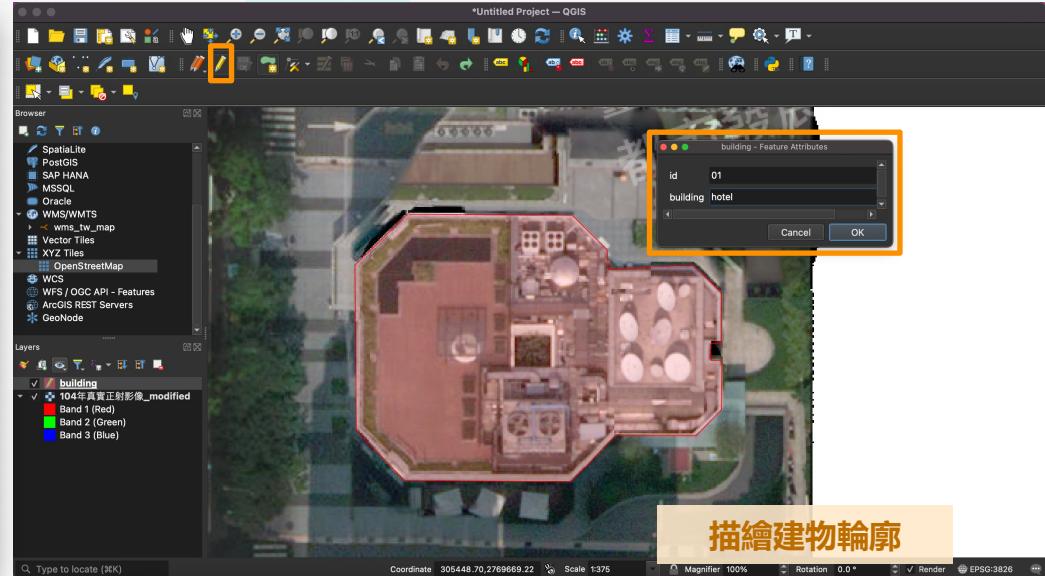
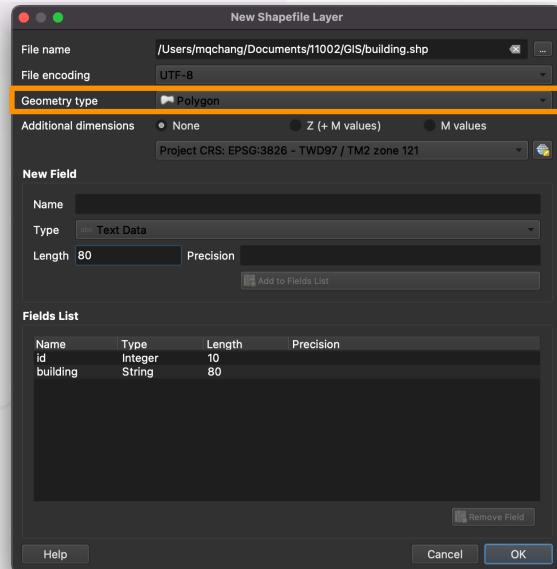


透整透明度檢視

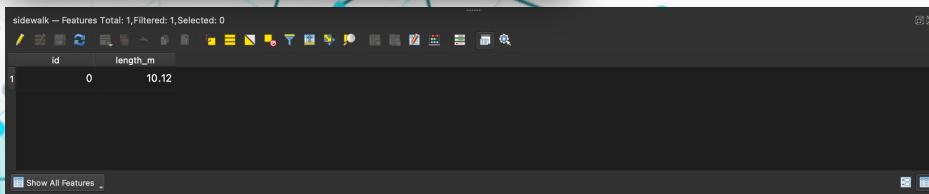
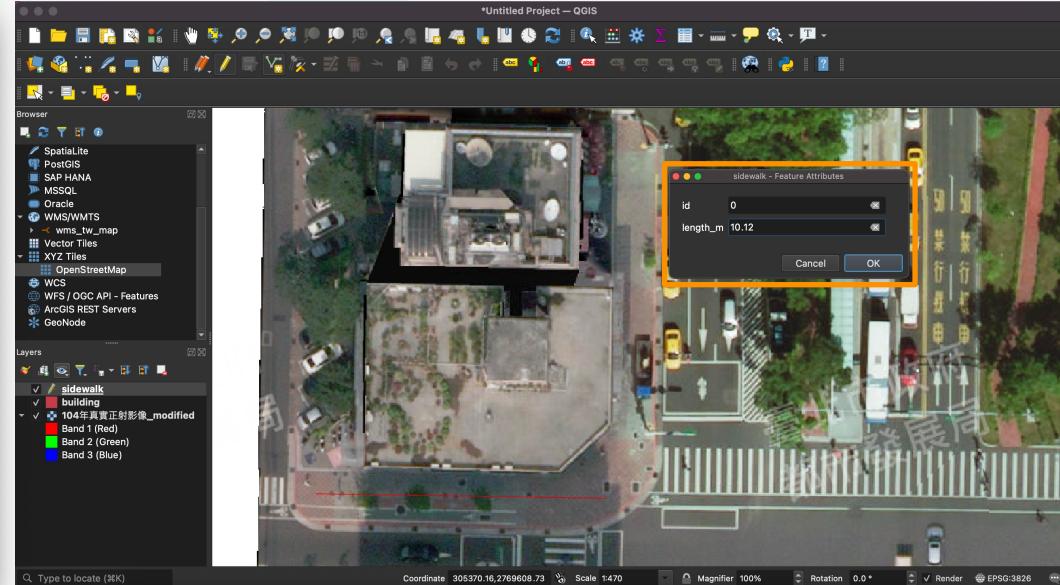
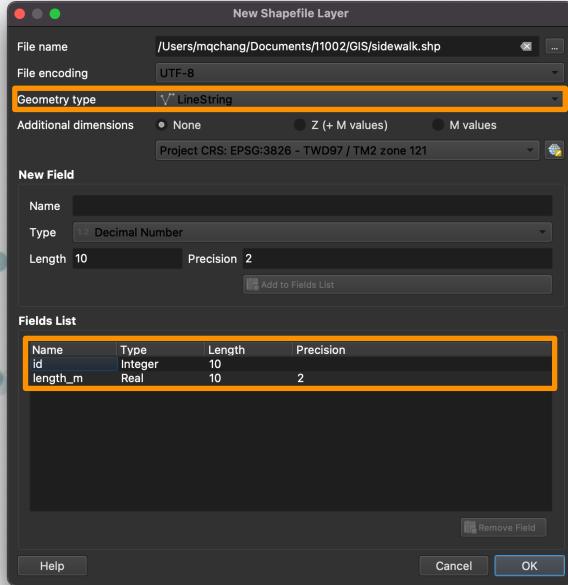
# 數化 - STEP 1 新增向量圖層（點/線/面）



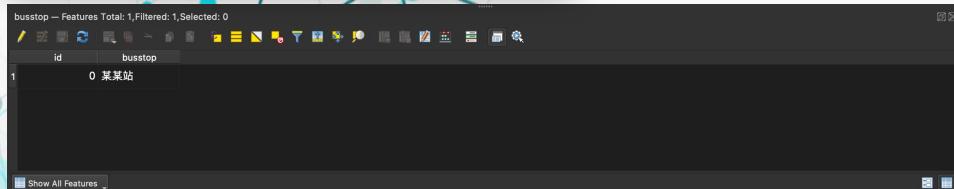
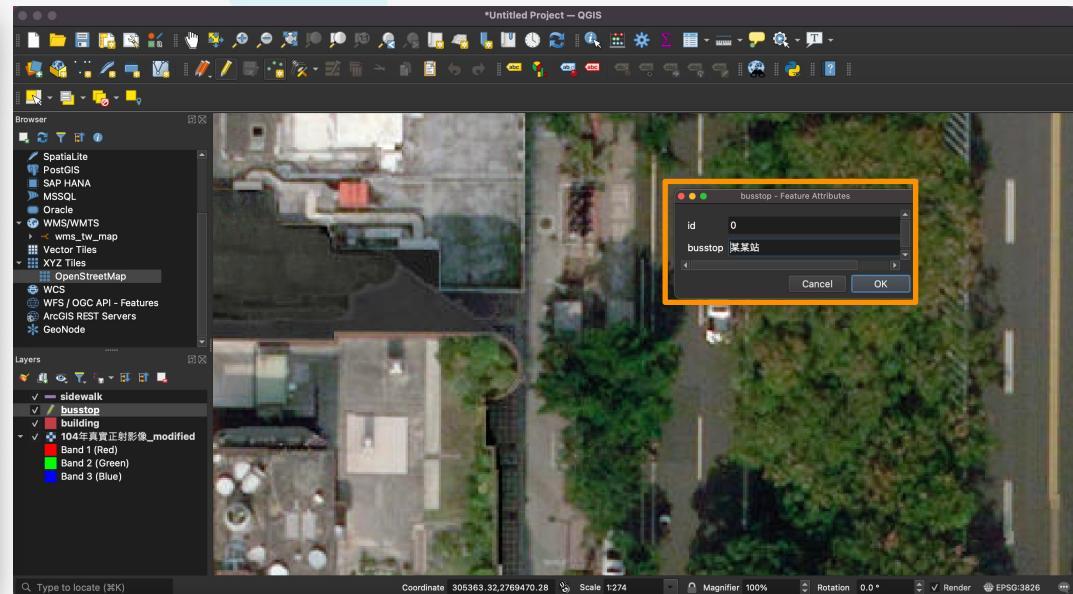
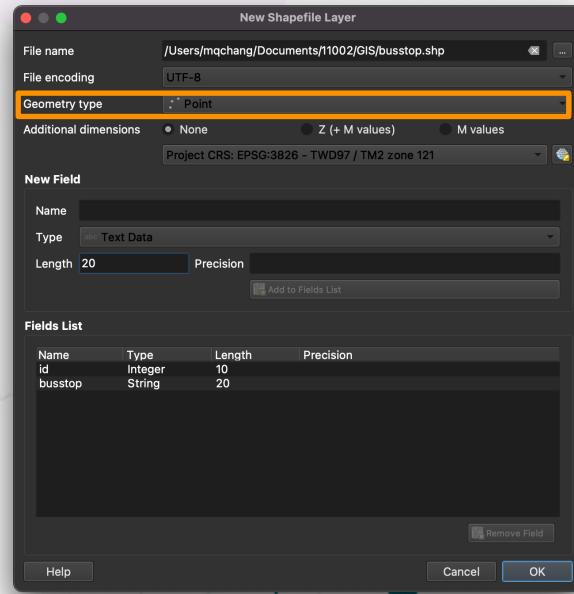
# 數化 - STEP 1 新增向量圖層（面）



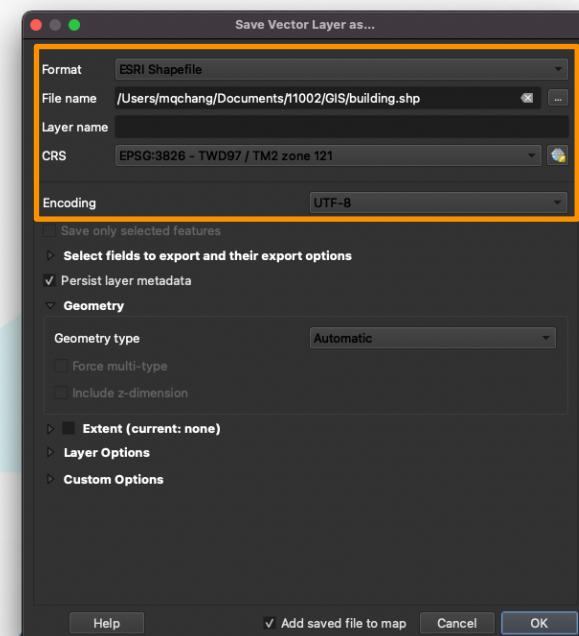
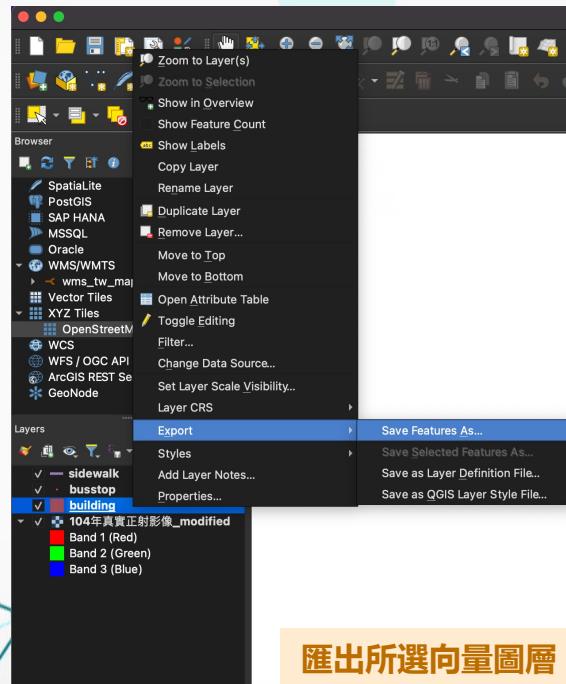
# 數化 - STEP 1 新增向量圖層（線）



# 數化 - STEP 1 新增向量圖層（點）

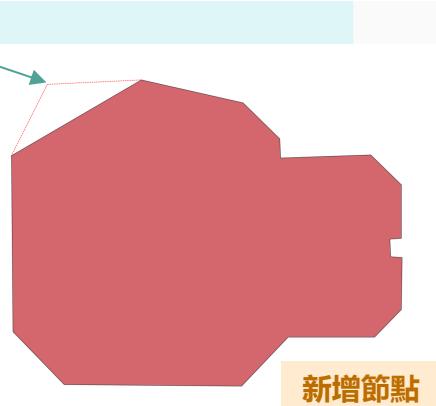
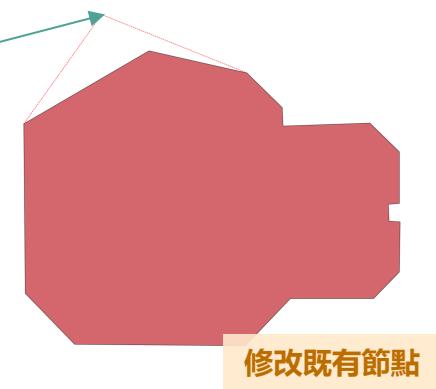


# 數化 - STEP 2 將建物輪廓以向量資料存檔



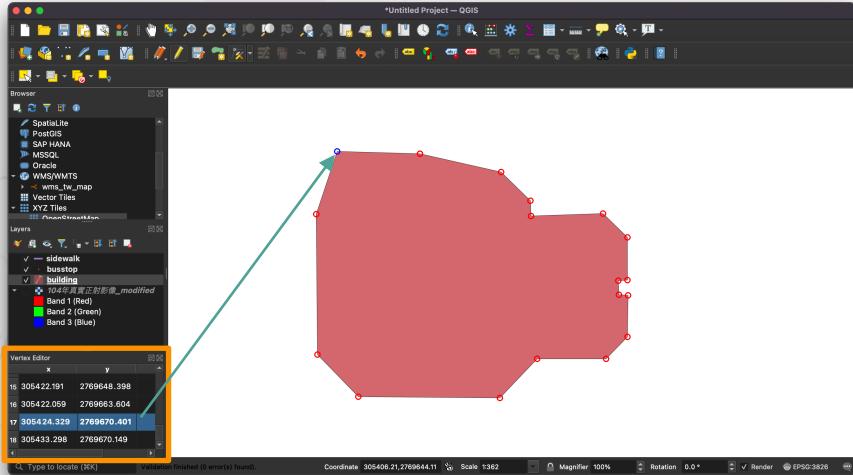
# 數化 – 幾何編修

修改或新增polygon中節點

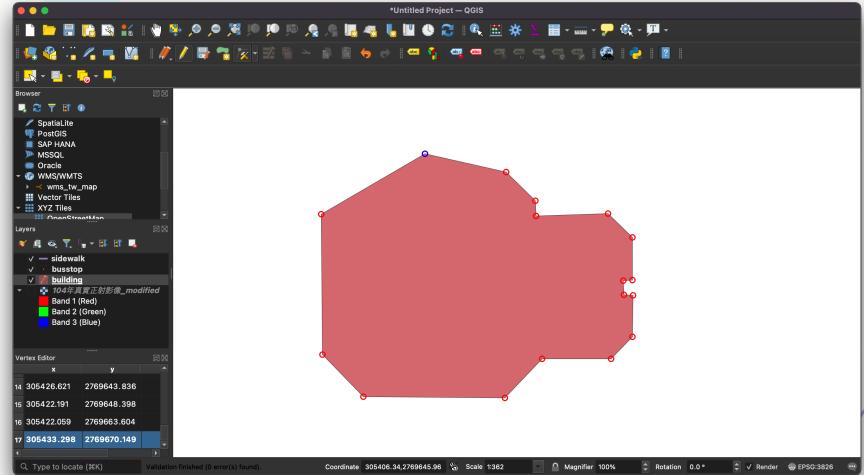


# 數化 – 幾何編修

## 刪除polygon中的節點



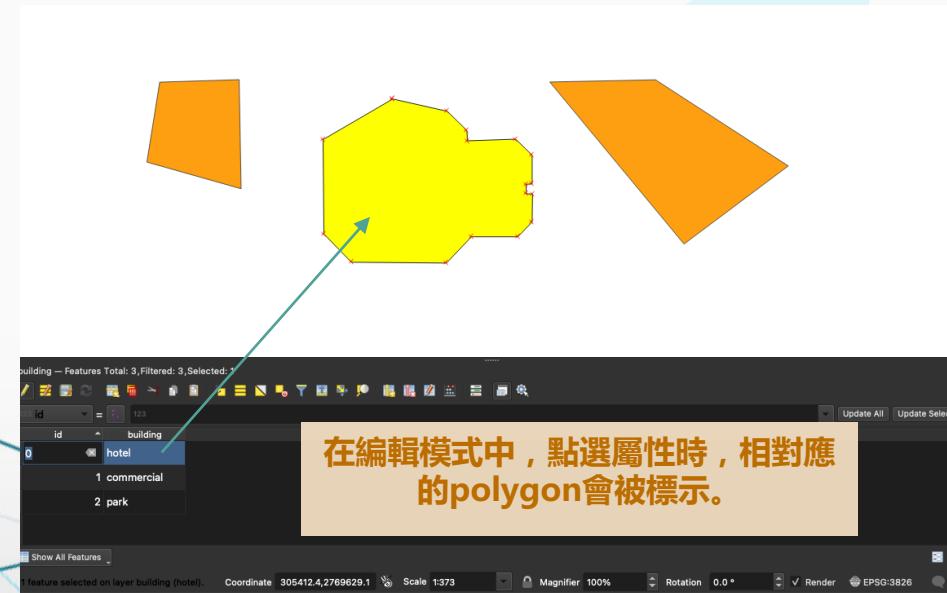
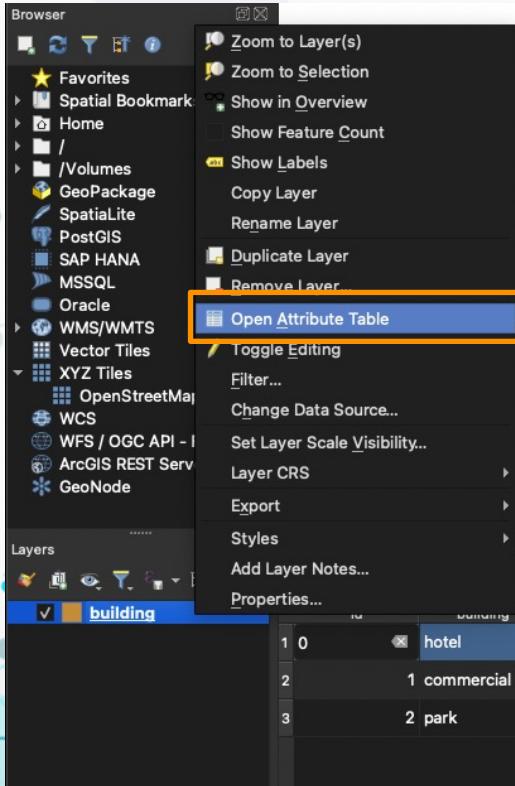
在polygon範圍內按右鍵，左下角會出現節點坐標  
(選取則顯示為藍色)，按delete鍵即可刪除節點



編修完成。

# 數化 – 屬性編修

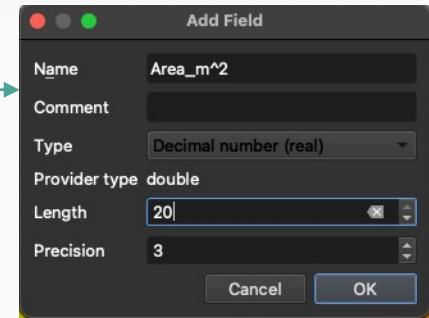
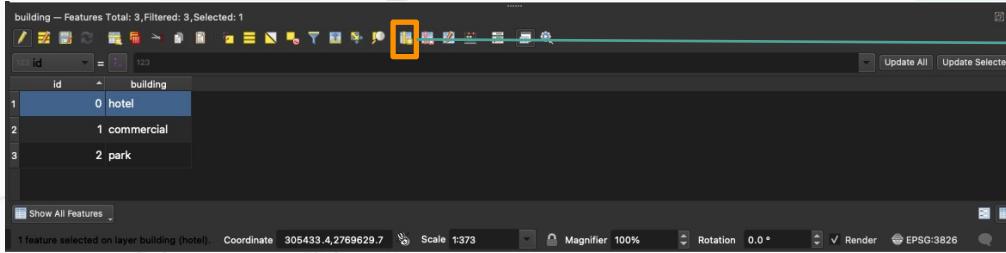
## 編輯工具列與空間連結



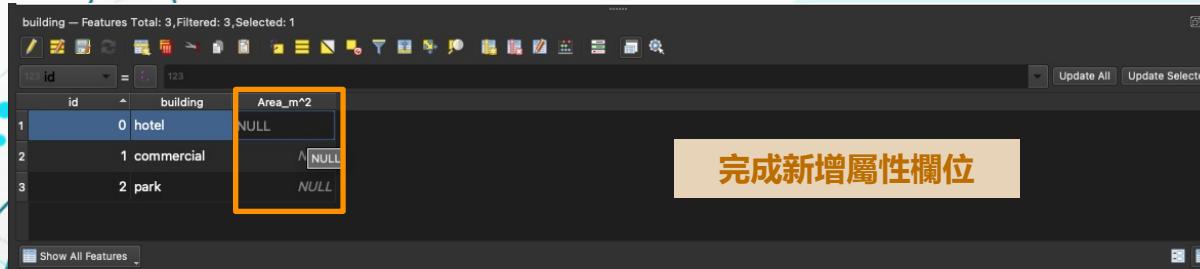
在編輯模式中，點選屬性時，相對應的polygon會被標示。

# 數化 – 屬性編修

新增屬性欄位



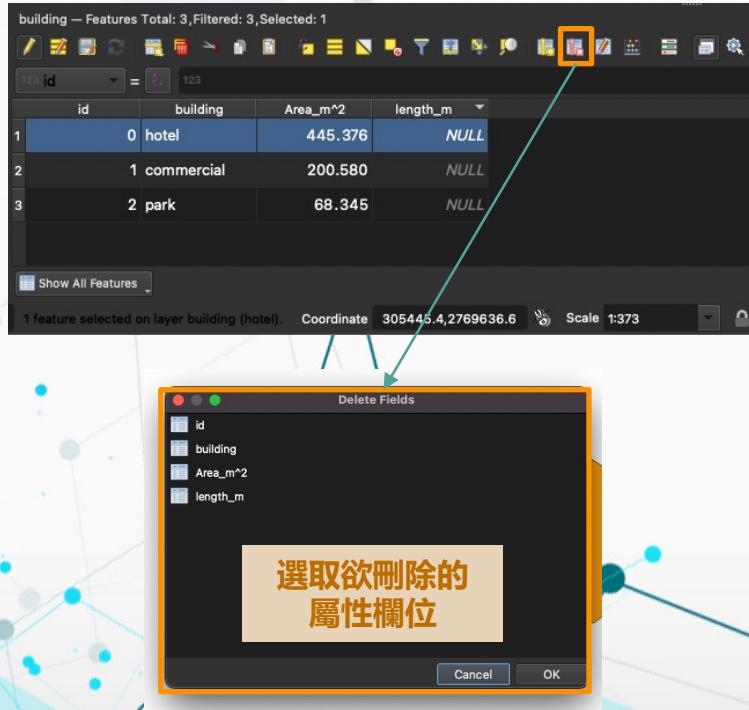
須先確定輸入欄位的值為何種類型及其數值位數



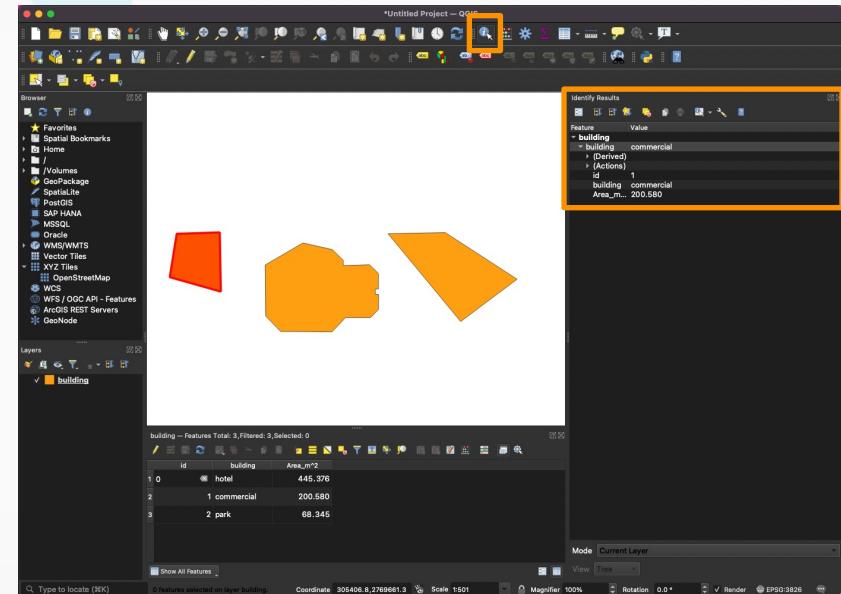
完成新增屬性欄位

# 數化 – 屬性編修

## 刪除屬性欄位

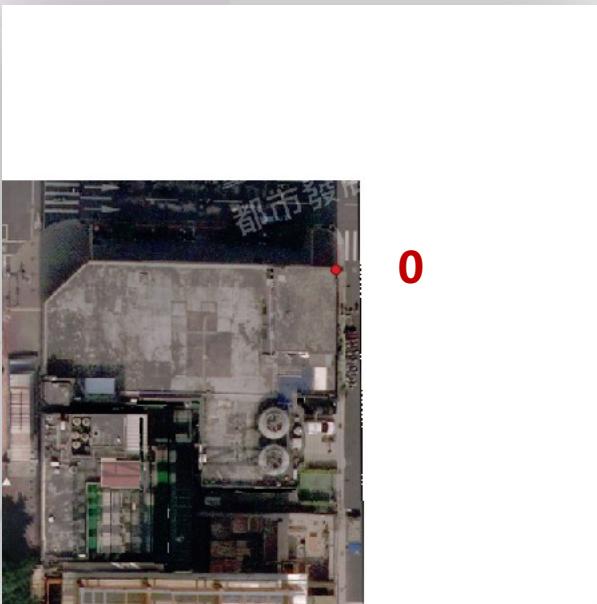


## 查看圖徵屬性

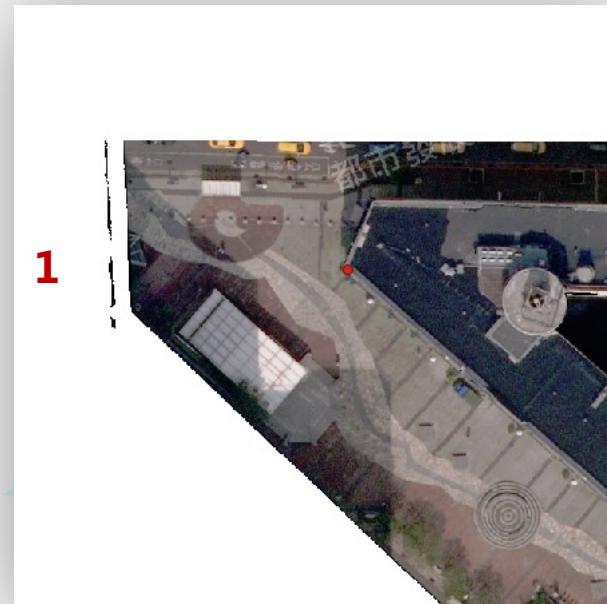


# 參考資料

- 臺北市百年歷史地圖 <http://gissrv4.sinica.edu.tw/gis/taipei.aspx>
- 臺北市地形圖資的建置（都發局 陳志丞）<https://www-ws.gov.taipei/Download.ashx?u=LzAwMS9VcGxvYWQvcHVibGljL0F0dGFjaG1lbnQvNDYxMDExMjkyNDQ5LnBkZg%3D%3D&n=NDYxMDExMjkyNDQ5LnBkZg%3D%3D>
- QGIS User Guide / Manual  
[https://docs.qgis.org/2.2/fi/docs/user\\_manual/introduction/qgis\\_configuration.html](https://docs.qgis.org/2.2/fi/docs/user_manual/introduction/qgis_configuration.html)

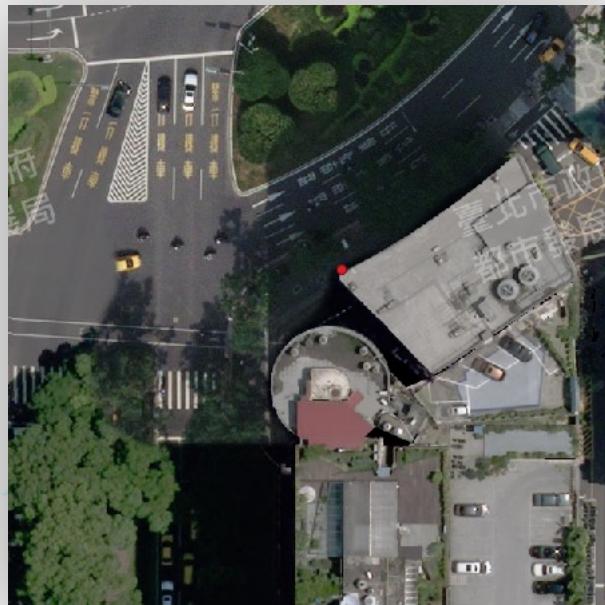


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1



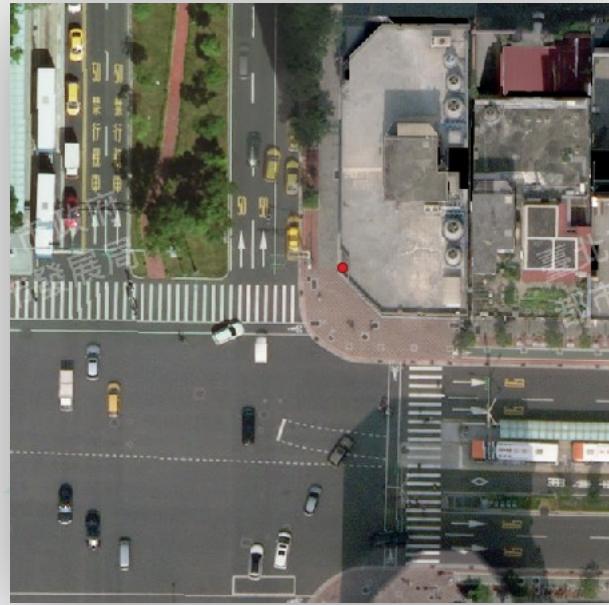


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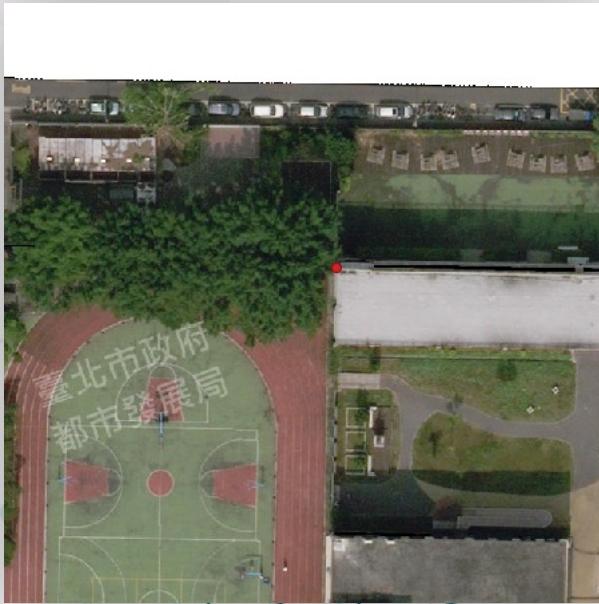


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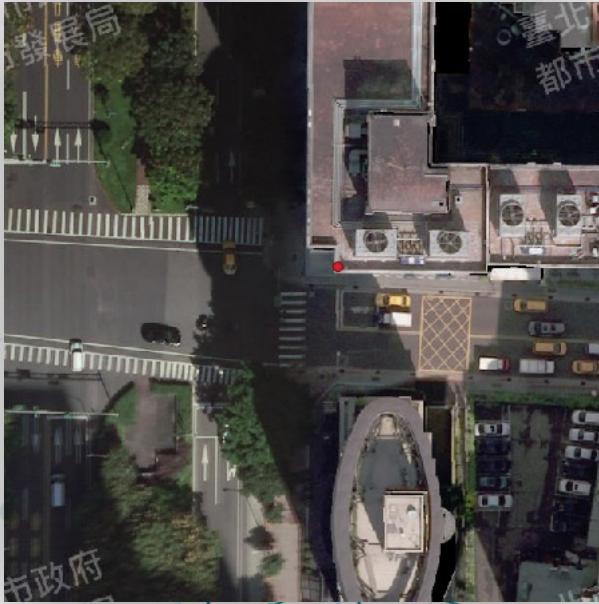




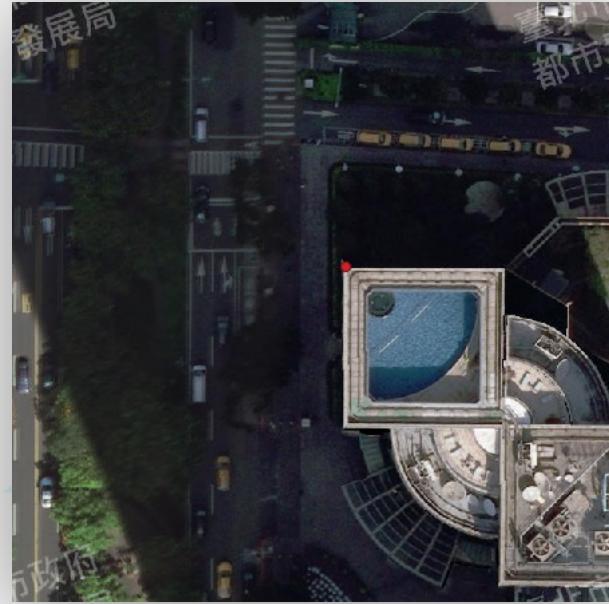
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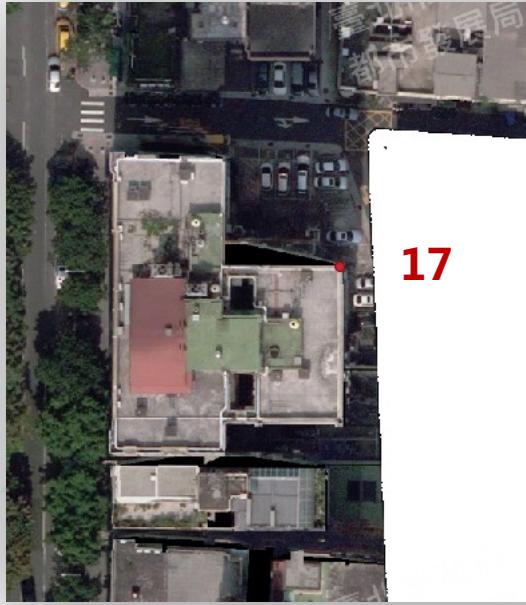
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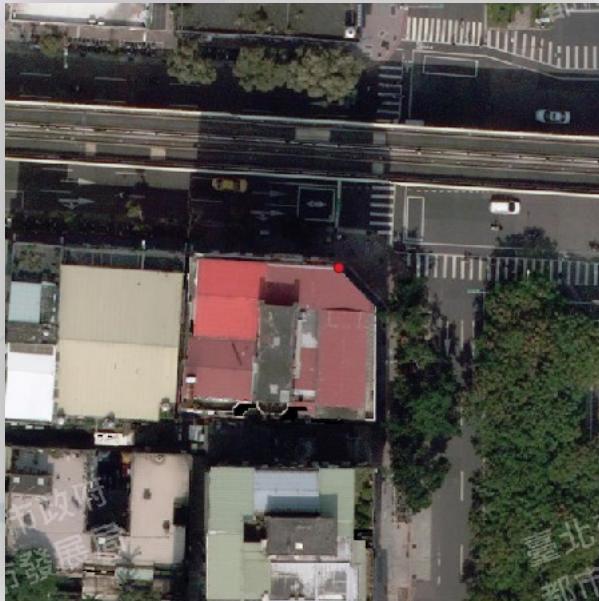
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16

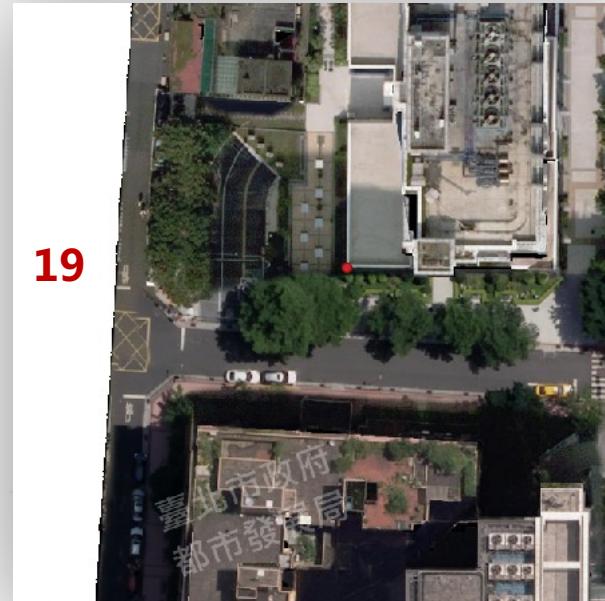


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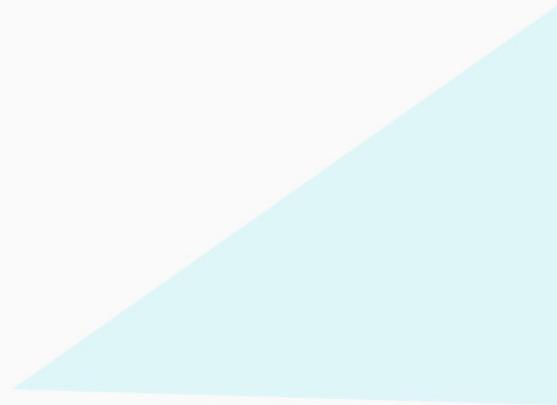


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