Appendix B Implementing Single-lift easy access to Artarmon Station

Summary

TfNSW does not want to replace the heavily fractured subway structure which would permit an arrangement similar to that at Springwood Station – a lift opposite the stairs at subway level (see Figure 6). As Wilkes Ave is at least 3 metres below Hampden Rd, the Community's preferred option has lift access at Wilkes Ave, Hampden Rd and Platform levels.

If TfNSW is unwilling to provide single-lift access at Wilkes Ave level, single-lift access at Hampden Rd level is preferred to TfNSW's two-lift/pedestrian bridge/additional staircase plan.

As discussed below a single-lift solution, with the lift a little to the north of the subway, can be compliant in terms of:
a) disabled access from both east and west sides of the station;
b) wheelchair-suitable paths around the stairs at platform level.

The single-lift solution need not place additional loads on the stair/subway structure, nor reduce the current strength of the structure. To avoid additional load on the subway/stair structure, the structure can be bridged by a platform extension, or a fenced walkway. See Figures 1, 2, 3 & 4.

It is assumed the current canopy will be removed and replaced by a more effective one attached to the walkway/platform extension. The stone capping of the stair structure should be removed as its rough texture is likely to cause minor injury on occasion.

While not necessary for compliant access, the top nine courses of the brick stair structure should be demolished to allow increased width of the walkway/platform extension by allowing it to project over the remaining stair structure, but not touch it – See Figure 4. This allows the path width either side of the stair void to be increased by 230 mm. This cracked brickwork is well above the brickwork providing structural support for embankment retention and track support.

The contrast between an appropriateness of the easy access option at Springwood and that offered at Artarmon could not be larger. The most appropriate use of the recycled temporary bridge and stair structures is to utilize them for a temporary stair access at the southern end of Artarmon station (see Figure 1) for the days when 'single-lift' construction works require the closure of the subway entrance.

Approach paths to single-lift from Hampden Rd and Wilkes Ave

Figures 1 shows a compliant disabled access paths to a lift north of the subway structure can be achieved from both Hampden Rd and Elizabeth St. The Elizabeth St approach is the path behind the old Library. A new subway at the Wilkes Ave level extends under the track to the lift marked in green in Figure 1. A new subway will also approach the lift from the Hampden Rd side. The exact location of the lift and subways north of the existing subway will consider other factors like services relocation and stability of the existing subway structure.

Transit Space requirements

TfNSW Asset Standards Authority Engineering Standard Track ESC 215 TRANSIT SPACE Version 4.9 Issued April 2013, Clause 3.1 Structure Gauge requires "All clearances between track and structures, and other tracks, shall meet the requirements of one of the following Structure Gauges: Normal Structure Gauge 1994; General Kinematic Structure Gauge". See Appendix A for relevant extracts.

From Table 1, Mainline service requirements, the General Kinematic Structure Gauge minimum horizontal clearance to structures and structure footings to one metre below design rail level is 2,150 mm from track centreline.

From Table 7, Normal Structure Gauge 1994 Horizontal clearance dimension is "2060 + M" where track is not superelevated. At the subway, 'M' will be less than 40 mm – giving a horizontal clearance dimension from track centreline of just under 2100 mm.

Clause 9, Operating Safety Requirements, requires "infrastructure extending along the track through platforms for a distance of 50m on both the arrival and departure side and vertically from 1200mm to 3200mm above design rail level, shall include a lateral safety clearance margin of 500mm beyond the kinematic outline of the vehicle (instead of the usual 200mm)". The train profile can be 1540 mm from track centres, plus the 500 mm clearance, plus an allowance of about 50 mm for dynamic movement of the train - giving a horizontal clearance dimension of just under, or just over 2100 mm.

The minimum horizontal clearance from track centre dimension to be observes at Artarmon should be 2,150 mm, but could be reduced to 2,100 mm where a path is most restricted.

Minimum distance of platform edge and walkway structures from track centre-line

The subway/stair structure creates a restriction on path widths from lift to platform. The platform can either be extended allowing a path to within 1650 mm/1700 mm from the track centreline, or the path can be in the form of a fenced walkway generally no closer than 2150 mm from the track centre-line. At its narrowest point walkway width could be increased to just 2100 mm from the track centre-line (see discussion of Transit Space requirements below).

Subway/stair structure preservation

At the APA information meeting 6 August 2014, TfNSW representatives advised they were only pursuing solutions that did not involve 'touching' the subway structure as their rules require that it be repaired to current engineering standards if touched. This surely should be interpreted as works should not increase the load on the stair structure, nor reduce the strength of the structure. The existing canopy and stone capping can surely be removed. Removing the nine

double-brick courses more than 900 mm above track level will provide an extra 230 mm of path width on each side of the stairs.

Wheelchair path requirements

Wheelchairs are a maximum 700 mm wide and require minimum door openings of 820 mm and a minimum path/corridor width of 1,000 mm. Thus, at least one access path around the subway stairs should be a minimum 1,000 mm wide but possibly have some doorway like intrusions into the access path. Disability Standards for Accessible Public Transport 2002 Clause 2.4 requires a minimum unobstructed width of access path must be 1200 mm (AS1428.2 (1992) Clause 6.4, Width of path of travel). See Appendix B.

As demonstrated in Figure 4, compliant paths can be achieved for both platform extensions and fenced walkways. Figure 4 uses General Kinematic Structure Gauge clearance of 2150 mm. The Normal Structure Gauge 1994 allows a path 50 mm wider than the 1150 mm shown resulting from General Kinematic Structure Gauge clearance – i.e., it allows a path 1200 mm wide.

Minimum path widths around stair structure

Assuming removal of the existing stair canopy and stone capping, the minimum platform width at the narrow northern end of the stair structure will be (3300 – 1700 = 1600 mm) on the east side and (3020 – 1700 = 1320 mm) on the west side – see Figure 4.

Assuming removal of the existing stair canopy and stone capping, and compliance with Normal Structure Gauge 1994, the minimum fenced walkway width (including the fence) at the narrow northern end of the stair structure will be (3300 – 2100 = 1200 mm) on the east side and (3020 – 2100 = 920 mm) on the west side. The east side path complies with the Disability Standards for Accessible Public Transport 2002 Clause 2.4. Compliance with the General Kinematic Structure Gauge minimum horizontal clearance of 2150 mm would reduce these dimensions by 50 mm.

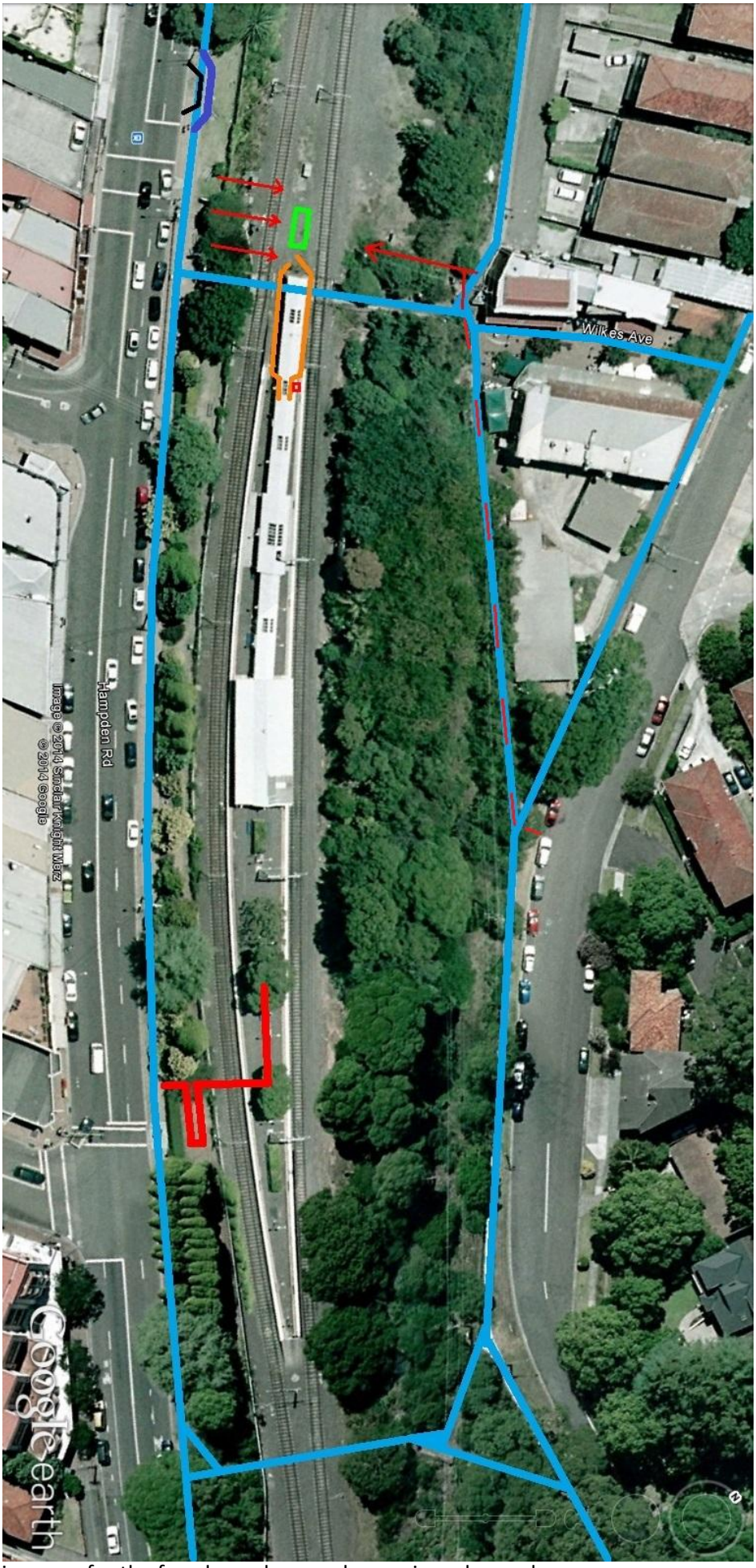
The removal of the top nine courses of bricks will permit fenced walkways a minimum 1330 mm wide on the west side of the stairs, and 1510 mm on the east side, as the walkway can bridge partially over the stair void – see Figure 4. These figures include fences.

The removal of the top nine courses of bricks will permit a platform extension a minimum 1780 mm wide on the west side of the stairs, and 1960 mm on the east side, as the extension can bridge partially over the stair void – see Figure 4. These figures include the fence protecting the stair void.

Given its greater path width around the stairs, a platform extension is preferred.

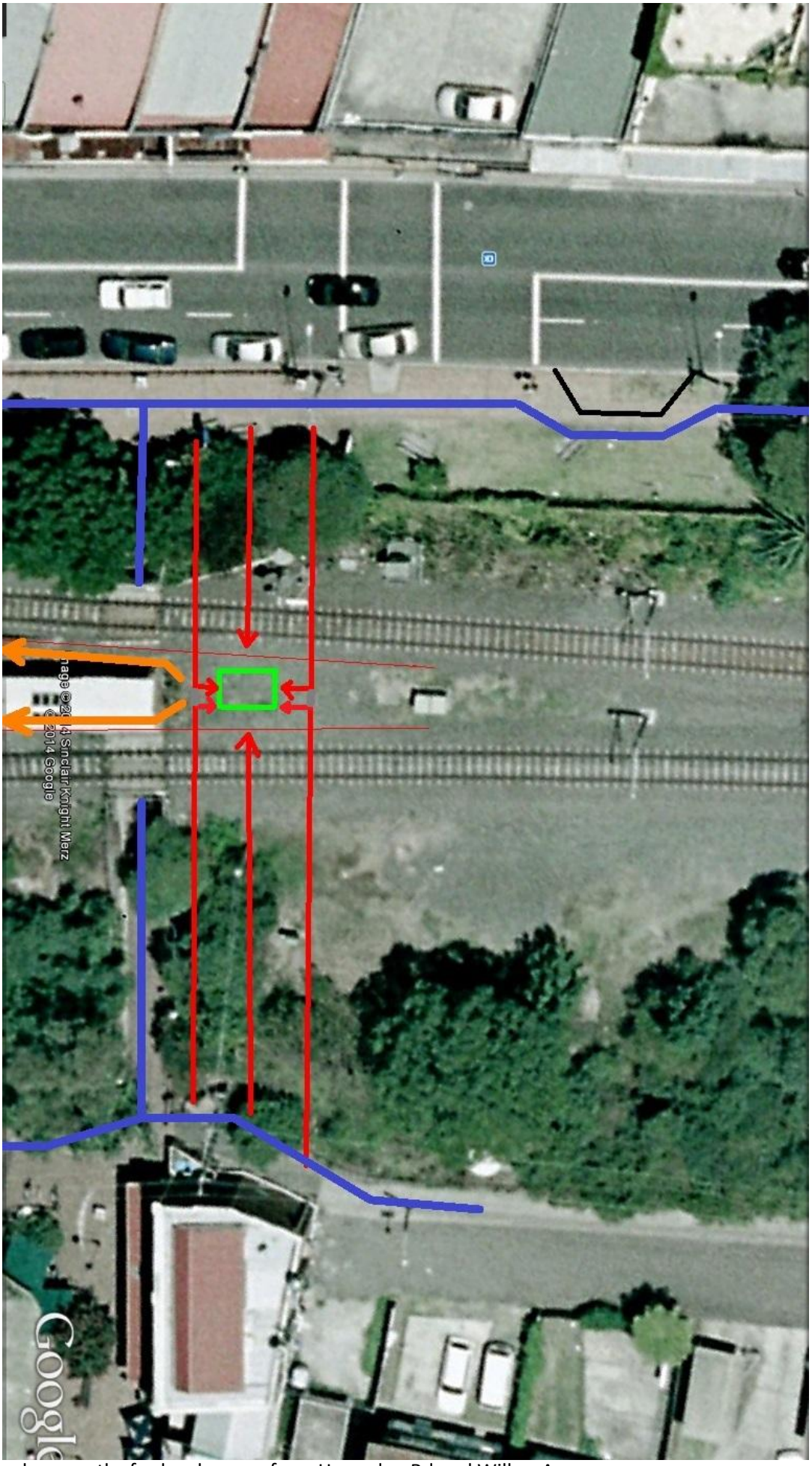
The overhead power wire support column near the east side of the stair case may need relocating several metres to the south as it partially obstructs the path from the lift.

The lift level at the platform should be set for a platform edge height of 1200 mm. If a platform extension is chosen, the extension could have a platform edge height of 1200 mm with a taper down to existing platform height (1050 mm?) south of the stairs.



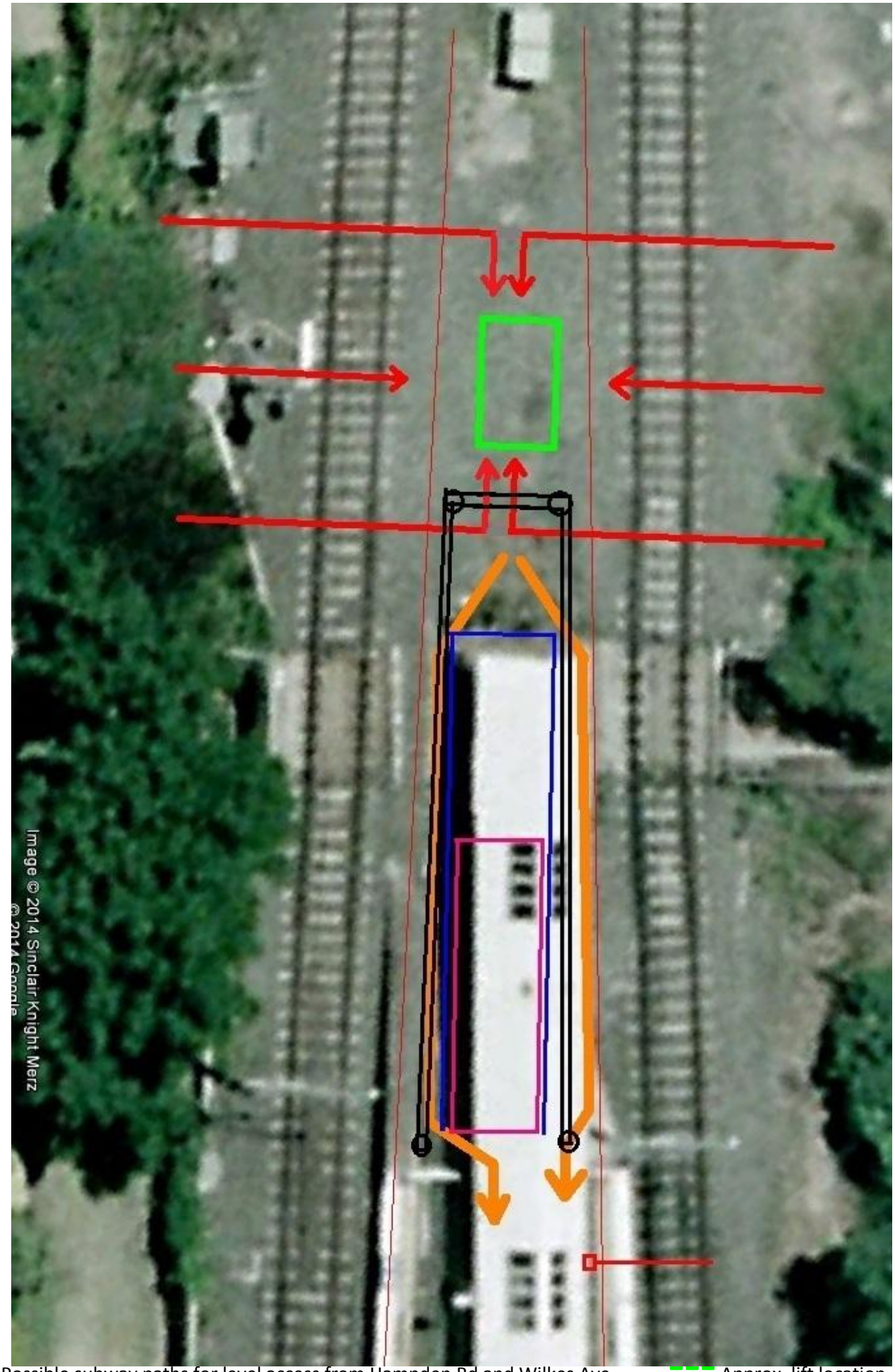
Temporary stair access for the few days when works require subway closure
Footpaths around station. East side easy-access possible via path behind old Library
Disabled carpark on footpath north of traffic lights Lift walkway or platform around stairs
Possible paths of approach to single-lift via new subways under the tracks north of the current subway.

Figure 1 - One-lift easy access from Hampden Rd and Wilkes Ave via new subways north of existing



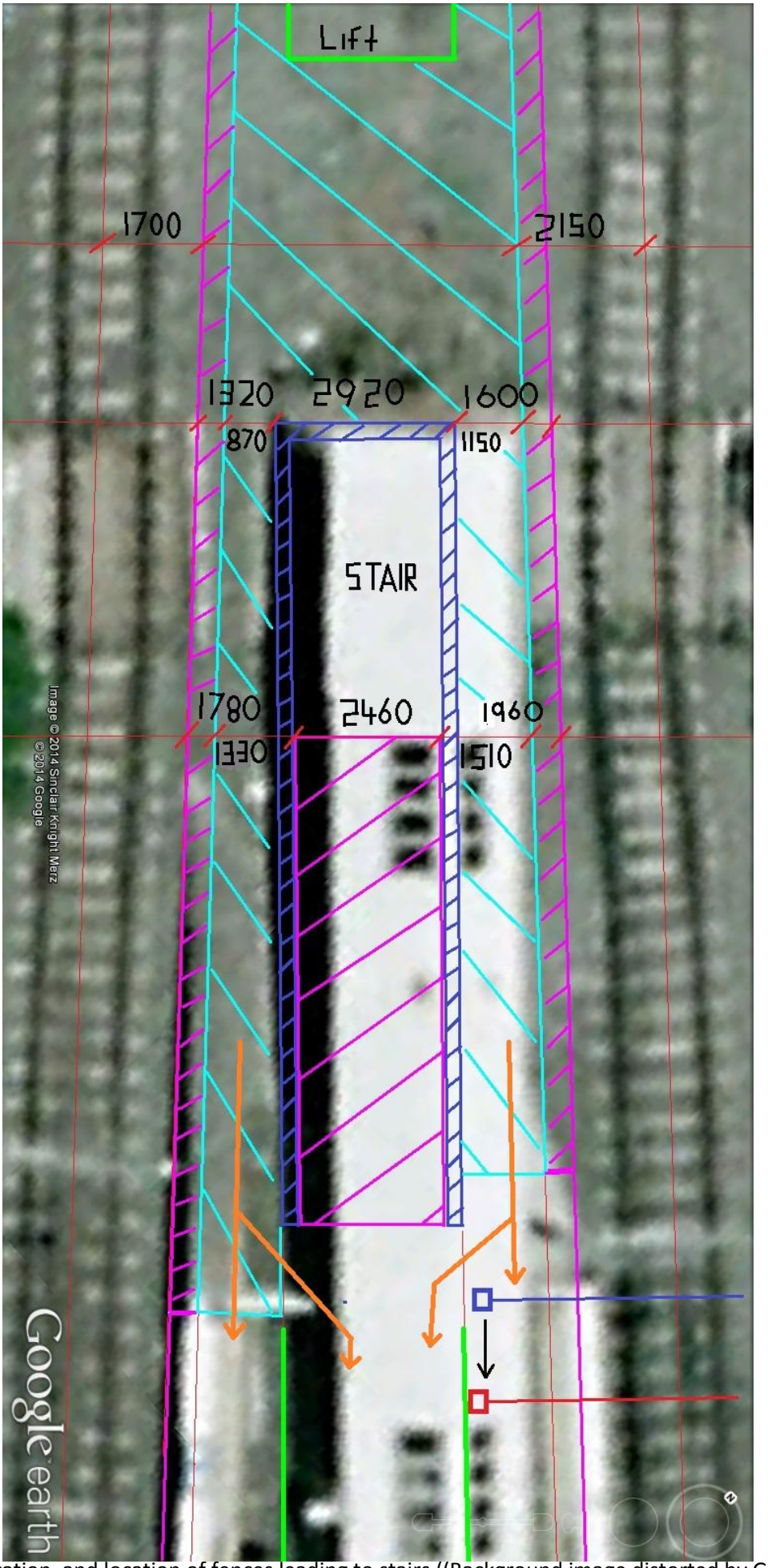
Possible subway paths for level access from Hampden Rd and Wilkes Ave
Footpaths around station. East side easy access possible via path behind old Library
Disabled carpark on footpath north of traffic lights
Lift
walkway or platform around stairs

Figure 2 - One-lift easy access from Hampden Rd and Wilkes Ave via new subways north of existing



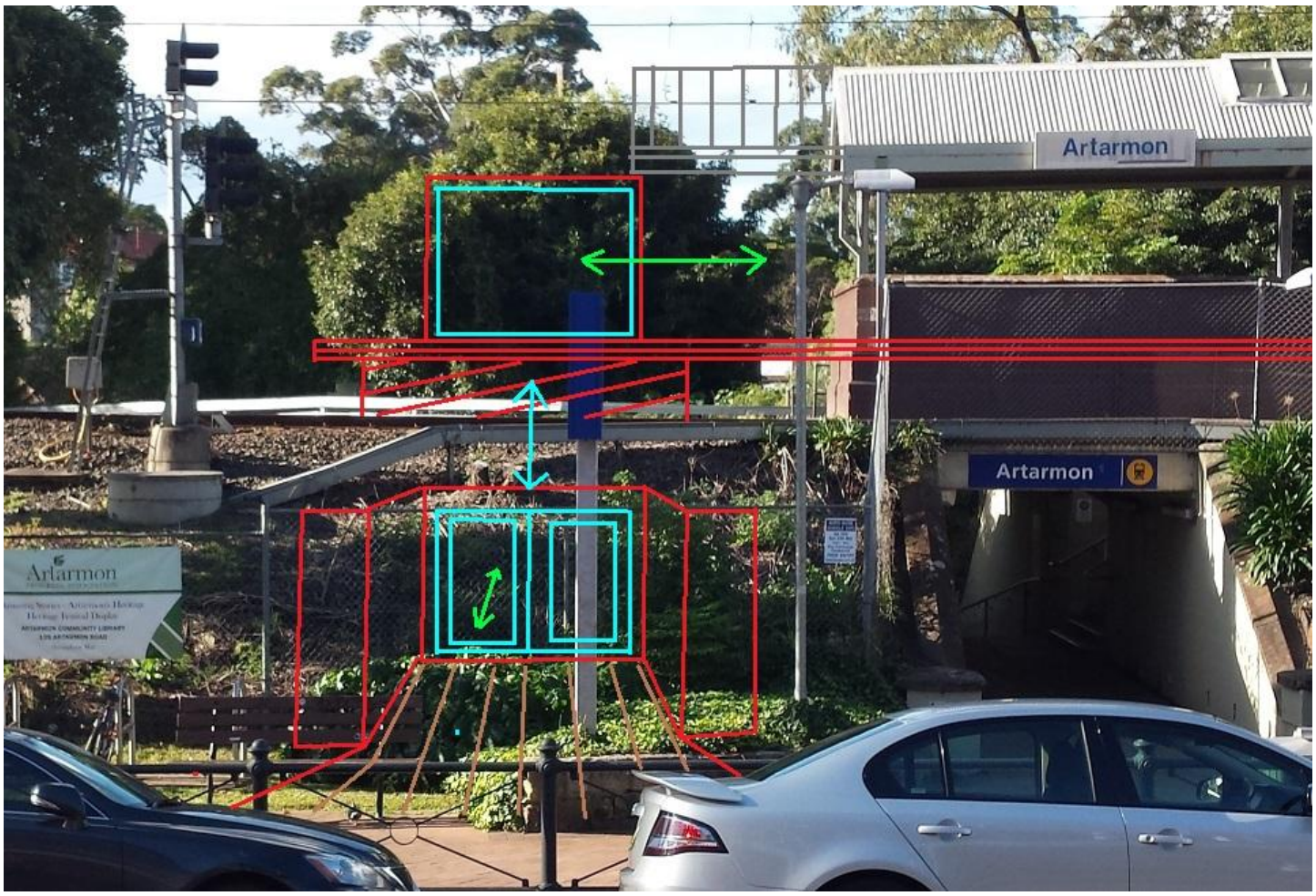
Possible subway paths for level access from Hampden Rd and Wilkes Ave. Approx. lift location
Relocated overhead power wire support column. Very thin red lines are structure exclusion lines
Piers and support structure for walkways or platform extension around stair structure.
Path created by walkway or platform extension around stairs
Exterior face of brick stair structure Minimum space at platform level for access via stairs

Figure 3 - One-lift easy access from Hampden Rd and Wilkes Ave



Approx. lift location, and location of fences leading to stairs ((Background image distorted by Google Earth))
Path from lift to using fenced walkway or platform extension around stairs to existing platform
Brick stair structure at platform level, overhead power wire support column
Relocated column
Allowable space for walkway bridging over subway structure to connect lift to existing platform with 2150 clear.
Additional walkway width if platform extended; Stair opening that cannot be covered by platform or walkway

Figure 4 - One-lift easy access from Hampden Rd and Wilkes Ave – fenced walkway/platform extension details



View of lift entrance and walkway/platform extension from Hampden Rd

Figure 5 – Single-lift access to station – One of many possible variations to access lift from Hampden Rd

View of lift entrance and walkway/platform extension from Wilkes Ave

Figure 6 – Single-lift access to station – One of many possible variations to access lift from Wilkes Ave

Figure 7 – Example single-lift access to station from a subway – Springwood Station