SCIRT Rebuilding Infrastructure

LEARNING LEGACY

Lessons learned from one of New Zealand's most challenging civil engineering projects: rebuilding the earthquake damaged pipes, roads, bridges and retaining walls in the city of Christchurch 2011 - 2016.

Tramway, Tuam Street: A Report on Archaeological Investigations

Story: Archaeology

Theme: Programme Management

A report which details the archaeological investigations carried out during the course of SCIRT project 10952, wastewater renewal work on Tuam Street.

This document has been provided as an example of a tool that might be useful for other organisations undertaking complex disaster recovery or infrastructure rebuild programmes.

For more information about this document, visit www.scirtlearninglegacy.org.nz

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TRAMWAY, TUAM STREET: A REPORT ON ARCHAEOLOGICAL INVESTIGATIONS

NZHPT AUTHORITY 2012/321EQ

SCIRT 10952

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JANUARY 2017

UNPUBLISHED REPORT FOR MCCONNELL DOWELL CONSTRUCTORS LTD

INTRODUCTION

On 26 September 2011 the New Zealand Historic Places Trust issued a global archaeological authority (2012/321eq) under Clause 10 of the Canterbury Earthquake (Historic Places Act) Order 2011 to the Christchurch City Council. This authority was issued to allow repairs to horizontal infrastructure damaged as a result of the Canterbury earthquakes. Subsequent to the earthquake on 22 February 2011, wastewater renewal work was carried out on Tuam Street. This work exposed the remains of a 19th century tramline (Figure 1). This report details the archaeological investigations of the tramway features.

Figure 1. Central Christchurch, showing (in red) location of works on Tuam Street where tramway features were uncovered. Image: Google Earth.

HISTORICAL BACKGROUND

The tram sleepers along Tuam Street formed part of the Canterbury Tramway Company's Addington line, which opened to the public on 5 January 1882 (Alexander 1985: 8, *Star* 5/1/1882: 2). The Addington line ran from Cathedral Square via Colombo and Tuam streets, then along Hagley Avenue before reaching its terminus at the Addington railway station. The line was extended further down Lincoln Road to reach the Addington show grounds by October 1887 (Alexander 1985: 8; Figure 2). The tender for construction of the Addington line was won by Charles O'Malley. Under the supervision of J. G. Warner, construction began at the Colombo-Tuam intersection in late August 1881, and within two weeks track had been laid as far as Madras Street (*Star* 13/9/1881: 2).

Operation of the Addington line was taken over by the Christchurch Tramway Company in 1893 after the Canterbury Tramway Company went into liquidation. Several cost-cutting measures were made by the new operator, including replacing the uneconomic steam-powered trams with horse-drawn trams (except on the Sumner line). They were also able to get underway with overdue track maintenance and repair work, which the Canterbury Company had long neglected. Under the Christchurch Tramway Company the Addington line was extended further down Lincoln Road, to reach the Sunnyside Lunatic Asylum in January 1896 (*Star* 2/1/1896: 3).

Under the Christchurch Tramway Board (established in 1903), electrified trams were introduced across Christchurch after 1905, replacing the steam- and horse-powered lines of the private tram companies. With the transition to electric trams the board had to immediately replace the tramlines of the old private companies, as the track was in poor condition and too light to handle the heavier electric tramcars. In many cases the original timber sleepers of the private companies had to be replaced as well. The change to the electric trams saw a slight alteration in the route of the Addington line, which now no longer travelled outbound to Hagley Avenue via Colombo and Tuam streets, travelling instead via Worcester Street West and Oxford Terrace, a route that was shared with the new Riccarton line (*Star* 3/7/1903: 2).

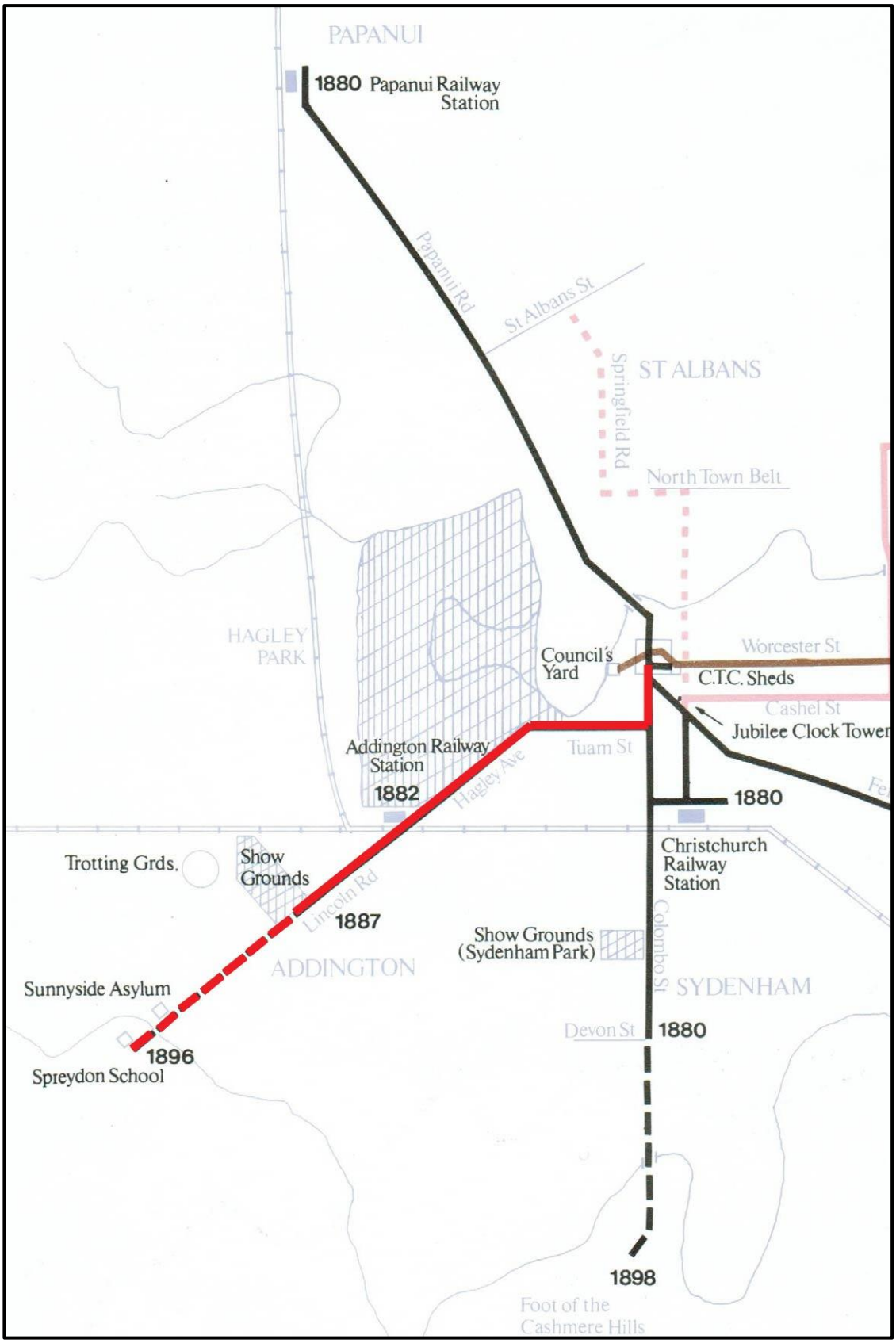

Figure 2. 19th century tram routes in western Christchurch, with the Canterbury Tramway Company's Addington line marked in red. The dashed line indicates the Christchurch Tramway Company's 1896 extension to the route. Image: adapted after Alexander 1985.

ARCHAEOLOGICAL MONITORING OF EARTHWORKS

The remains of the tram line on Tuam Street were exposed in three places (Figure 3). In each case the remains were recorded by Hamish Williams of Underground Overground Archaeology. The first discovery was on 9 December 2013, when pot-holing for services exposed a single tram sleeper at the Antigua Street intersection (Figure 4). Further remains of the tram line were recorded on 16 December 2013, after adjacent sleepers were exposed in this first 12 m of trenching. Further remains of the tram line were subsequently exposed in January and April 2014 as excavations progressed eastwards along Tuam Street.

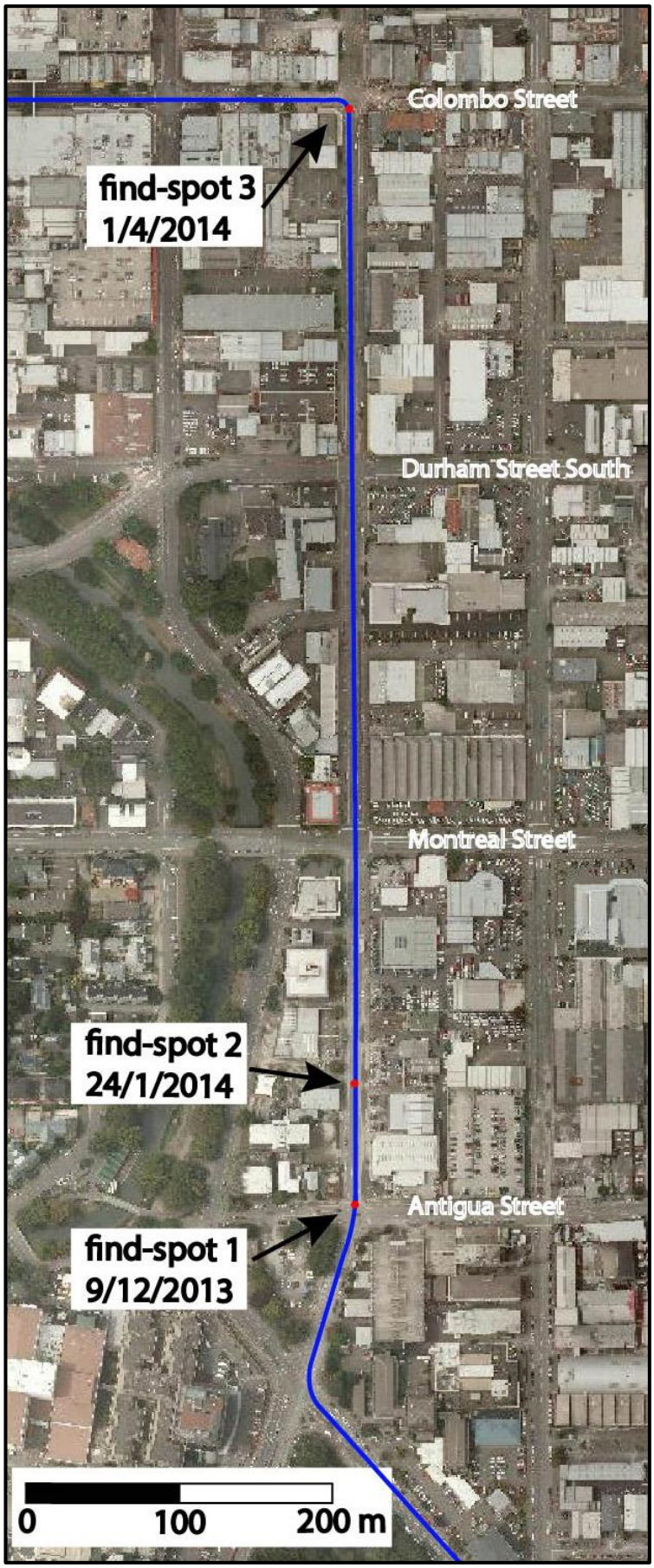

Figure 3. The tramway route (marked in blue), and the three locations where tramway sleepers were exposed during the course of wastewater renewals on Tuam Street. Image: SCIRT n.d.

Figure 4. Timber tramway sleeper as first exposed during pre-works potholing near the Tuam-Antigua Street intersection.

Four tramway sleepers were exposed at the first find-spot, at the Tuam and Antigua street intersection. Each of these measured 180 mm wide and 100 mm in height, and had been laid directly atop the natural tan coloured sand/silt substrate, at a depth of 400 mm below the road surface (Figure 5 and Figure 6). These sleepers were set at distances of 800, 700 and 1300 mm apart, and projected into the trench by 700 mm, necessitating their partial removal. A sample from one of these removed was identified rīmu (*Dacrydium cupressinum*) by Dr Rod Wallace of the University of Auckland.

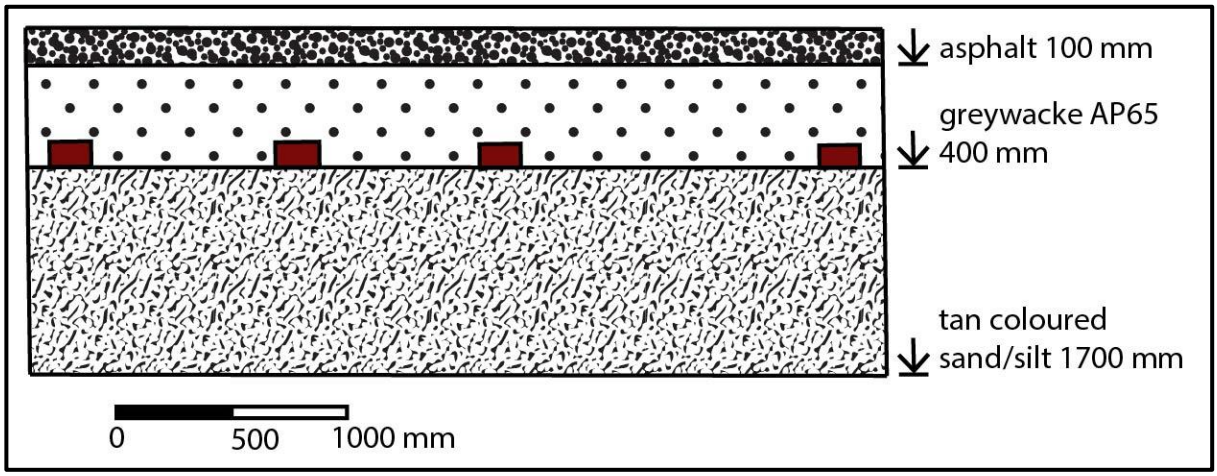

Figure 5. Stratigraphic profile of the southern baulk of the trench at find-spot 1, showing the in situ tram sleepers (brown).

Figure 6. T**wo of the four tramway sleepers as exposed in the southern baulk of the trench at find-spot 1, looking south.**

Located in the centre of the roadway, a single complete tramway sleeper was exposed at the second find-spot during the course of making a lateral connection to 32 Tuam Street on 24 January 2014 (Figure 7). This sleeper measured 2200 mm in length, was 180 mm wide and 100 mm in height. This was removed by contractors without an archaeologist present. It was confirmed by the contractors that the sleeper had been laid directly atop the natural tan coloured sandy substrate, which was at a depth of 400 mm below the road surface (Figure 8). The upper face of this sleeper had two round ferrous-stained holes of 6 mm diameter where the tram rails had once been attached with spike nails. These holes were located 200 mm and 400 mm from each end of the sleeper (Figure 9).

Figure 7. Looking north along the lateral connection trench, towards the location of find-spot 2.

Figure 8. The stratigraphy at northern end of the lateral trench, where a complete tram sleeper was found. AP40 backfill of new wastewater main visible at right.

Figure 9. Complete tramway sleeper as removed by contractors at find-spot 2.

The third Tuam Street tramway find-spot was approximately 3 m west of the Tuam-Colombo street intersection. Three sleepers each measuring 180 mm wide and 100 mm in height were uncovered during the course of pot-holing to locate services on 1 April 2014 (Figure 10). These sleepers had been laid directly on top of the tan coloured natural sand/silt substrate at a depth of 400 mm below the road surface, projecting from the southern baulk of the trench into the trench line. Two of the three sleepers had been truncated previously by trenches dug for the installation of a concrete stormwater pipe and ducted communications cables (Figure 11). While the other find-spots were from straight sections of track, the sleepers at find-spot 3 were from a section of track where the tramway curved around the Colombo Street corner. As such, these exposed sleepers had once supported curved lengths of steel track and had been laid not at right angles to the road, but on an angle (Figure 12). These sleepers were unaffected by trenching and remain in situ.

Figure 10. View eastwards along trench-line at find-spot 3, showing three timber tramway sleepers.

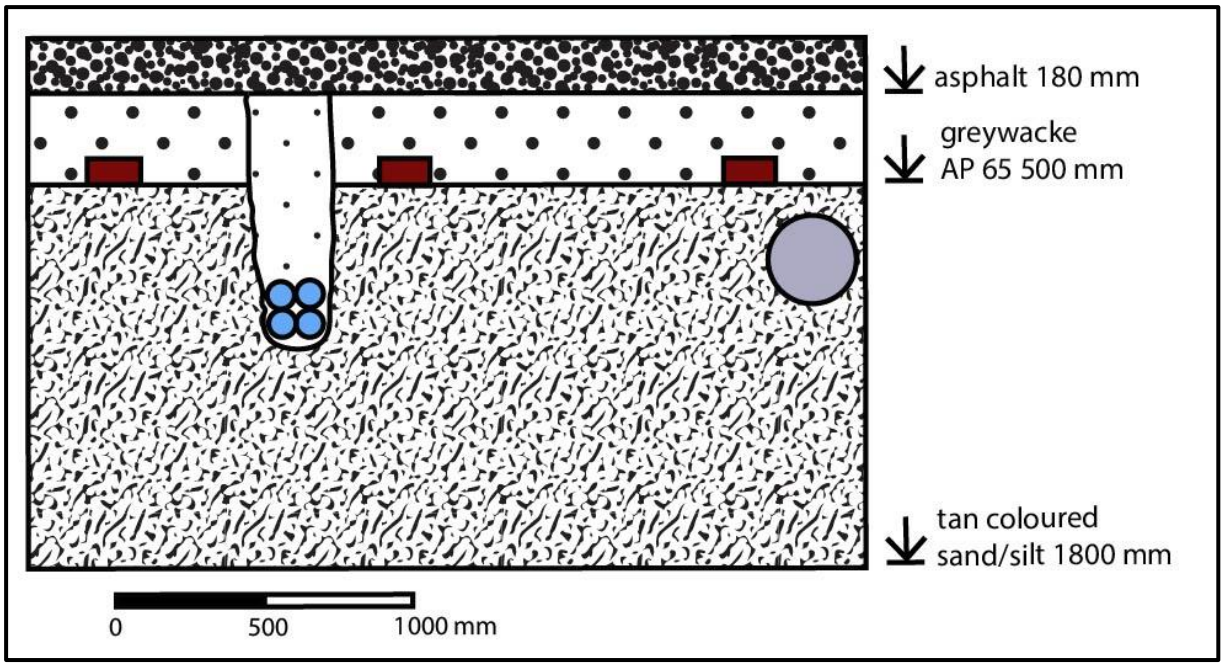

Figure 11. Stratigraphic profile of south baulk of trench at find-spot 3 showing in situ tram sleepers (brown), modern telecommunications ducts (blue) and concrete stormwater pipe (grey).

Figure 12. Detail of one of the exposed tram sleepers at find-spot 3. The chalk outline represents that part of the sleeper that remains in situ under the roadway, and shows the angle at which sleepers had been laid relative to the 90 degree centre-line of road.

DISCUSSION

From historical records it could be determined that the tramway sleepers uncovered on Tuam Street were installed in late 1881 and formed part of the Canterbury Tramway Company's Addington line.

With the introduction of electric trams by the Christchurch Tramway Board in 1905, the Addington route was altered slightly and after this time trams ceased to travel down Tuam Street.

The steel tram tracks along Tuam Street were likely removed when the line was abandoned, but as confirmed by excavations in the roadway at least some of the timber sleepers from this line were left in situ. It is possible that these sleepers were left in place because their removal would not have been considered practical on account of disturbance to traffic, though it is probably more likely that their removal for reuse elsewhere was not considered worthwhile because of their poor condition.

Both steam- and horse-drawn trams of the 19th century and the electric trams of the early 20th century ran on tram rail laid at the standard gauge of 4 feet and 8½ inches (1435 mm), fixed to timber sleepers. All the sleepers exposed on Tuam Street had been laid directly onto the natural sand/silt substrata rather than being bedded on a ballast layer of compacted gravel 6 to 8 inches thick, as was standard practice for tramlines of the electric era. This method of track construction was improved in the 1920s, with many of the more heavily trafficked tram routes being re-laid with substantial reinforced concrete foundations (Alexander 1986: 52). Examples of these 1920s concrete tramline foundations have been found at numerous sites throughout central Christchurch, including on several sites within the boundaries of the SCIRT 10952 project, such as on Colombo Street between Tuam and Lichfield streets, and on High Street between Tuam and Madras streets (Figure 13). In most cases these electric tram lines followed the same routes as those established by the private tramway companies of the 19th century, where construction of these deep foundations in the 1920s would have destroyed any possible remaining physical evidence of their public transportation predecessors.

Figure 13. Stratigraphic detail of 1920s concrete tramway foundations of 450 mm thickness on Colombo Street between Tuam and Lichfield streets, as exposed during trenching for wastewater renewals, 3 December 2013. Any evidence of surviving 19th century tram lines would have been destroyed during the construction of these deep foundations.

CONCLUSION

Evidence of a 19th century tramline was uncovered in three locations on Tuam Street in late 2013 and early 2014 during the course of wastewater renewals as part of SCIRT 10952 infrastructure rebuild works. Historical records confirmed that these sleepers formed part of the Canterbury Tramway Company's Addington line that opened in 1882 and was abandoned in about 1905 when electric trams were introduced. Evidence of this tram line remains in situ underneath the Tuam Street roadway.

As a result of this work, this site has been recorded as archaeological site M35/1161 (see attached).

REFERENCES

Alexander, M., 1985. *Rails in the Roads: the steam and horse tram era in Christchurch*. Christchurch, NZ: Christchurch Transport Board and Tramway Historical Society.

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NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Summary Site Record

NZAA SITE NUMBER: M35/1161

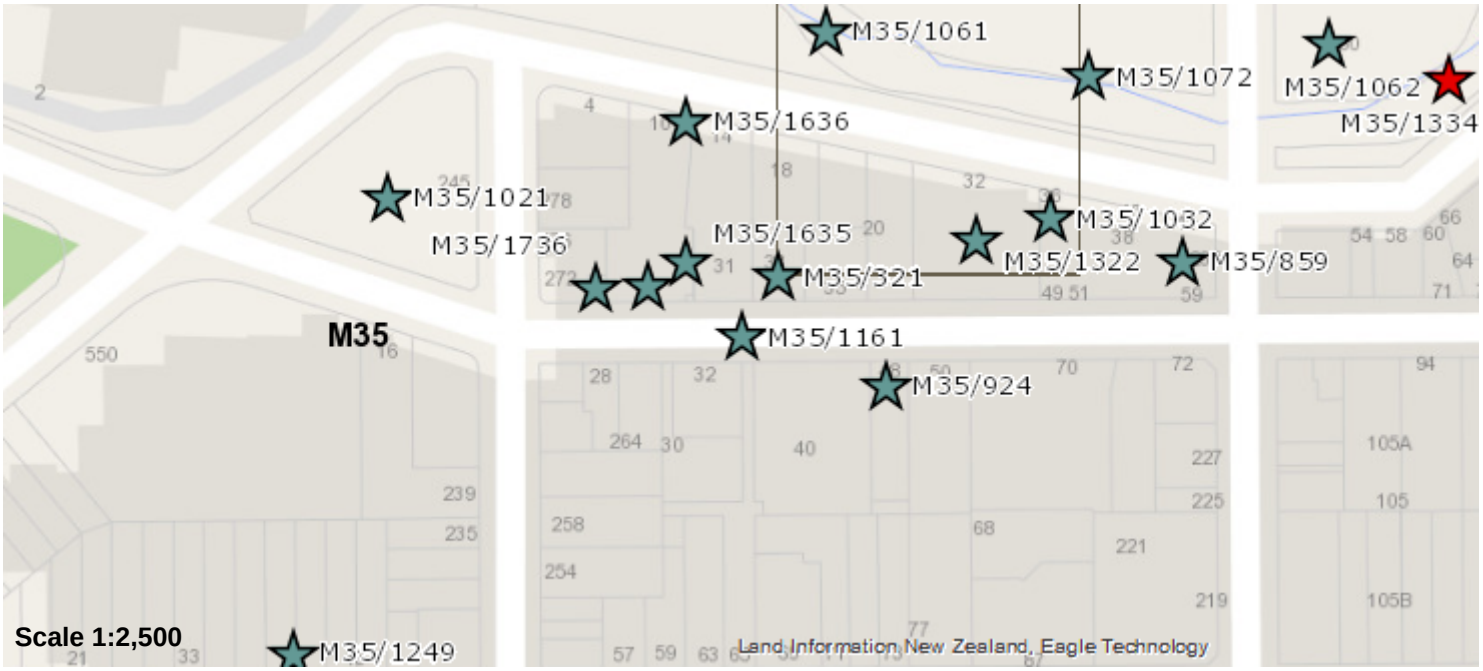
SITE TYPE: Transport/ communication

SITE NAME(s):

Record last updated: 26/07/2016

SITE COORDINATES (NZTM) Easting: 1569988 **Northing:** 5179668 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:**



Finding aids to the location of the site

Tuam Street, Christchurch.

Brief description of the site

A 19th century tramway.

Condition of the site when last visited

Below surface

This report contains a summary of the information about this site held in ArchSite.

For a complete Site Record Form containing all the recorded information, please contact the ArchSite Coordinator.

For further information please contact:

ArchSite Coordinator, PO Box 6337, DUNEDIN

admin@archsite.org.nz

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