

7 April 2022

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Kia ora Sam

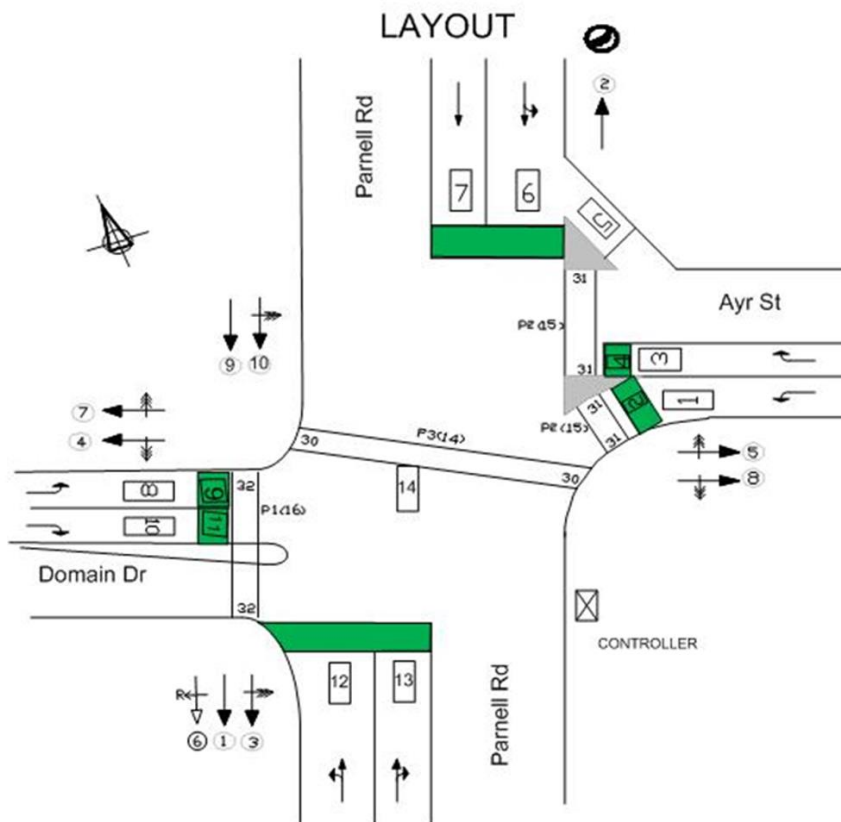
The information you requested - CAS-536096-P9S1Z5

I refer to your official information request dated 4 April 2022 regarding the traffic lights at the intersection of Domain and Parnell Road turning into Ayr Street.

Attached to this letter is the Controller information sheet (CIS) for the Parnell Rd, Domain Dr, and Ayr St intersection. The CIS is a technical document that the signal designer wrote to specify to the software developer how the traffic lights are to operate. This document is unlikely to be understood by anyone without traffic light expertise and so excerpts are taken from the CIS and explained below.

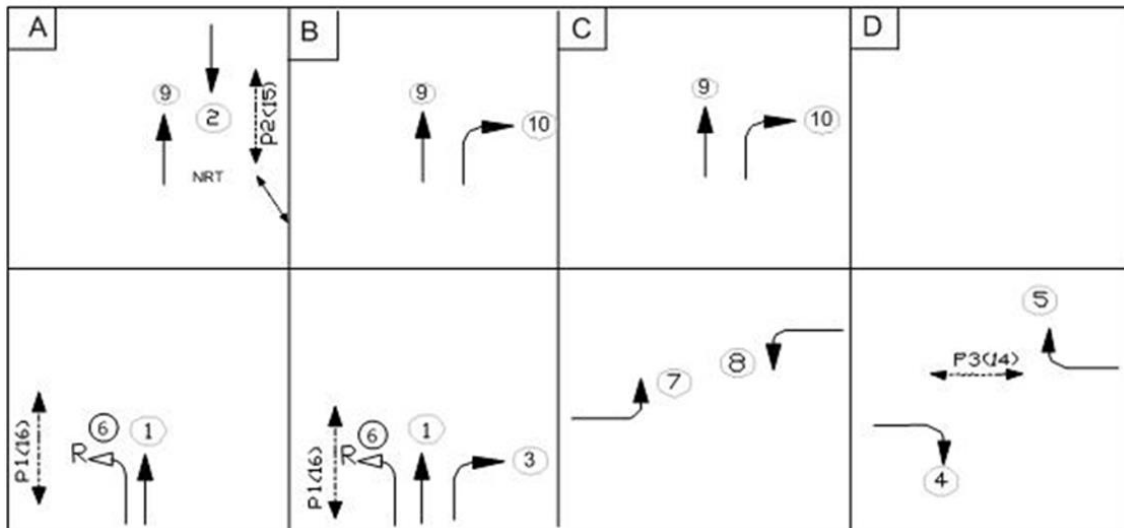
Intersection layout

For reference, below is a schematic diagram of the traffic signal hardware and phasing at the Parnell Rd, Domain Dr, and Ayr St intersection. This is not to scale:



Traffic light phasing

The intersection is made up of two off-set 'T' intersections, but for traffic signal purposes it is one intersection controlled by a single traffic signal controller. That is to say that the lights at the two 'T' intersections never operate out of synchronisation.



The intersection operates using 4 phases of traffic signals, labelled A to D. The phases are shown above and explained:

A Phase: Northbound and southbound traffic on Parnell Rd has green lights. Vehicles cannot turn right from Parnell Rd onto Ayr St. Vehicles will be allowed to turn left from Parnell Rd onto Domain Dr dependant on whether a pedestrian is crossing Domain Dr. Pedestrians can cross over Ayr St.

B phase: Northbound traffic on Parnell Rd has a green light. Vehicles can turn right from Parnell Rd onto Ayr St. Vehicles will be allowed to turn left from Parnell Rd onto Domain Dr dependant on whether a pedestrian is crossing Domain Dr.

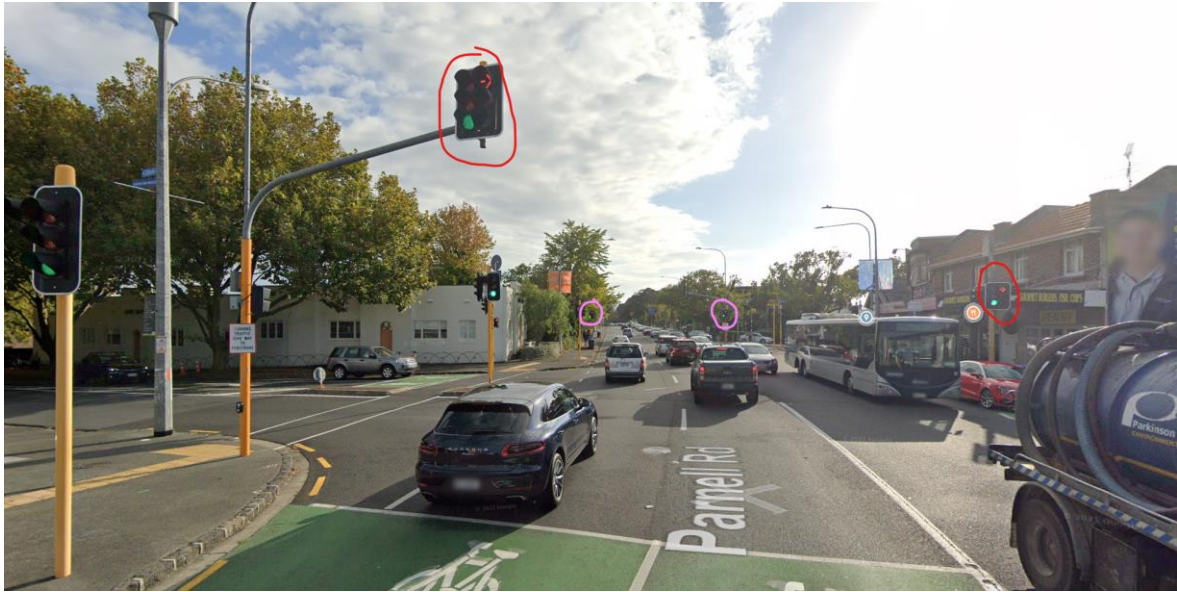
C phase: Vehicles can turn left out of both Domain Dr and Ayr St. Vehicles that have turned left out of Domain Dr can either travel north onto Parnell Rd or turn right into Ayr St.

D phase: Vehicles can turn right out of both Domain Dr and Ayr St. Pedestrians can cross over Parnell Rd.

The phases run in alphabetical order, and A phase must run in every cycle of traffic lights. The phases are triggered by vehicles waiting on different approaches to the intersection. If no cars are waiting for a certain phase, then that phase will be skipped and will not run until the next cycle of traffic lights.

The right turn from Parnell Rd northbound into Ayr St.

There are four sets of right turn arrows that control the right turn into Ayr St. Two of these sets of right turn arrows are electrically wired in parallel and operate identically. The remaining two sets of right turn arrows are also electrically wired in parallel but operate differently to the other two.



The two sets of right turn arrows (circled in red above) are green during B phase, and red in all other phases. On the phasing diagram, this is represented as the number 3 arrow.

The two sets of right turn arrows (circled in pink above) are green in both B and C phases. On the phasing diagram, this is shown as the number 10 arrow. These right turn arrows follow special logic for road safety reasons. When transitioning from B to C phase, all four right turn arrows will turn yellow then red at the same time as the straight through round lights so that all northbound traffic on Parnell Rd see red lights and red right turn arrows. 4 seconds later, traffic turning left out of both Ayr St and Domain Dr get a green light, and three seconds after that **only** the right turn arrows circled in pink turn green to allow traffic that has turned left out of Domain to turn right into Ayr St. It is at this stage that the 2 different sets of right turn arrows have different colour displays.

We hope that this explains the operation of the intersection with specific regard to the right turn into Ayr St.

Yours sincerely

Rua Pani
Group Manager Auckland Transport Operations Centre