

## Appendix H: Victoria Street Arterial Options

The following paragraphs describe development of the Victoria Street Arterial options.

### Options 1 to 4 (Drawing not included)

The layouts for options 1 to 4 were prepared to indicate a range of intersection configurations that could be combined to produce a final draft layout for you to present. The intention of providing a number of alternatives was to provide a series of ideas for discussion purposes from which to identify the combinations of features from a range of options, that would be most likely to be "attractive" from a social point of view and also from a traffic engineering point of view.

### Option 1 (Drawing not included)

- (i) Commences at Pukuatua Street with a roundabout that forms the intersection of Pukuatua/Tarewa/SH30A
- (ii) Alignment roughly follows the railway corridor and crosses Pererika Street at the western end of the St John Ambulance site
- (iii) The existing SH 30A alignment and its intersection with Eruera Street is unaffected
- (iv) Pererika Street is obstructed by the alignment and two cul-de-sac heads are installed on each side of the alignment
- (v) Similarly King Street is turned into a cul-de-sac to the north of the alignment while the intersection of Elizabeth and King is moved to the south west to be clear of the alignment
- (vi) The curve of the alignment has been designed so that the church on the south eastern corner of Ranolf/Victoria is not physically affected
- (vii) In order to ensure the church is unaffected, the Ranolf/Victoria intersection has been signalised
- (viii) The alignment follows the existing Victoria Street alignment with land take of approximately 7.5 m required on the northern side and 5 m required on the southern side.
- (ix) The intersection of Ruhi, Union, and Toko streets with Victoria remain as T intersections
- (x) Due to the close proximity of Ranolf Street and Fenton Street, the intersections of Ruhi and Toko respectively would be left turn in/left turn out (LTI/LTO) only
- (xi) The two existing entrances into the Rotorua Central site are constructed as T intersections
- (xii) The intersections of Herewini and Eason streets with Victoria are closed off with cul-de-sac heads being constructed on Herewini and Eason
- (xiii) The alignment crosses Fenton Street, through the existing Big Fresh site and curves to the south east to join the existing alignment of Te Ngae Road in the vicinity of the NIWA building

- (xiv) For this option the intersection of Victoria and Fenton has a roundabout; this has a significant impact on the new motel on the southwest corner of Victoria/Fenton
- (xv) The alignment follows Te Ngae Road before curving to the east to join the existing SH 30A at a roundabout intersection where the eastern arterial also connects
- (xvi) A cul-de-sac head is constructed on Te Ngae Road to the north west of the alignment and on Ti Street to the west of the alignment
- (xvii) We have shown the intersection of Malfroy/Fenton/Malfroy extension as a two-lane roundabout.
- (xviii) The alignment of Malfroy extension follows along the rear of the Ti Street properties before curving to the north east to join the new SH30A alignment in a T intersection to the west of the new roundabout at SH30/SH30A
- (xix) The option as drawn allows right turns out of Malfroy Road extension onto the new SH 30A, but prohibits right turns into Malfroy Road extension; this movement would be provided for through the ability of vehicles to U-turn at the roundabout immediately to the east

#### **Option 2 (Drawing not included)**

- (i) The alignment commences at the existing Pukuatua Street/SH 30A intersection with a signalised intersection
- (ii) It follows SH 30A to the western end of Eruera Street before curving to the south east and crossing Pererika Street to the west of the St John Ambulance site
- (iii) The western end of Eruera Street is connected to the existing SH 30A alignment to the south
- (iv) Pererika Street is obstructed by the alignment and two cul-de-sac heads are installed on each side of the alignment
- (v) Similarly King Street is turned into a cul-de-sac to the north of the alignment while the intersection of Elizabeth and King is moved to the south west to be clear of the alignment
- (vi) The curve of the alignment has been designed so that the church on the south eastern corner of Ranolf/Victoria is not physically affected
- (vii) In order to ensure the church is unaffected the Ranolf/Victoria intersection has been signalised.
- (viii) The alignment follows the existing Victoria Street alignment with land take of approximately 7.5 m required on the northern side and 5 m required on the southern side.
- (ix) The intersection of Ruhi, Union, and Toko streets with Victoria are closed off with cul-de-sac heads being constructed on Ruhi, Union, and Toko streets
- (x) The intersections of Herewini and Eason streets with Victoria are limited to LTILTO movements
- (xi) The two existing entrances into the Rotorua Central site remain as crossroads intersections with Herewini and Eason opposite
- (xii) The alignment crosses Fenton Street, through the existing Big Fresh site and curves to the south east to join the alignment of Te Ngae Road
- (xiii) For this option the intersection of Victoria and Fenton is signal controlled. While there is still an impact on the new motel on the southwest corner of Victoria/Fenton, this impact is less than with a roundabout intersection

- (xiv) The alignment follows Te Ngae Road before curving to the east to join the existing SH 30A at a roundabout intersection where the eastern arterial also connects
- (xv) A cul-de-sac head is constructed on Te Ngae Road to the north west of the alignment and on Ti Street to the west of the alignment
- (xvi) We have shown the intersection of Malfroy/Fenton/Malfroy extension as a signalised intersection
- (xvii) The alignment of Malfroy extension follows along the rear of the Ti Street properties and joins the new SH 30A at a 5 legged roundabout intersection with the eastern arterial, SH 30, and the old SH 30A

### **Option 3 (Drawing not included)**

Option 3 has many of the features of option 2 with the following exceptions:

- (i) It follows the existing SH 30A to the western end of the existing Amohau Street alignment, in the vicinity of the end of Whakatau Street, before curving to the south east and crossing Pererika Street to the east of the St John Ambulance site
- (ii) The western end of Eruera Street is turned into a cul-de-sac and a service lane provided adjacent to the new alignment to provide access to the properties on the existing SH 30A between Eruera Street and Amohau Street
- (iii) The new SH 30A alignment has a priority control intersection with the western end of Amohau Street
- (iv) Pererika Street is obstructed by the alignment, however, left turn in and left turn out access is provided between Pererika and the new SH 30A alignment
- (v) The intersection of Elizabeth and King remains in the same location as at present but becomes a right angle bend as opposed to a T intersection
- (vi) The intersection of the arterial with Ranolf and Victoria is slightly further north than with Option 2; therefore the alignment is further away from the church property at the cost of encroaching further into the Rotorua Central property.

### **Option 4 (Drawing not included)**

For Option 4 the major intersections are controlled with roundabouts and therefore property encroachment at intersections is greater than with some of the other alternatives. The alignment of Option 4, which incorporates the features described below, is approximately the same as the alignment for Option 2.

- (i) The alignment commences at the existing Pukuatua Street/SH 30A intersection with a roundabout controlled intersection
- (ii) It follows SH 30A to the western end of Eruera Street before curving to the south east and crossing Pererika Street to the east of the Pererika/Philip Street intersection
- (iii) The western end of Eruera Street is connected to the existing SH 30A alignment to the south
- (iv) Pererika Street is obstructed by the alignment and a cul-de-sac head is installed on the eastern side of the alignment

- (v) The intersection of Pererika and Philip remains in the same location as at present but becomes a right angle bend as opposed to a T intersection
- (vi) King Street and Elizabeth Street are obstructed by the alignment with cul-de-sac heads constructed on each
- (vii) For this option the curve of the alignment has been designed so that it meets Ranolf Street immediately opposite Victoria Street
- (viii) The church on the south eastern corner of Ranolf/Victoria is affected by the alignment. Because the alignment creates an impact on the church we have installed a roundabout controlled intersection to demonstrate the alternative available. This has a significant impact on the church building
- (ix) The alignment follows the existing Victoria Street alignment with land take of approximately 7.5 m required on the northern side and 5 m required on the southern side.
- (x) The intersection of Ruhi, Union, and Toko streets with Victoria remain as T intersections
- (xi) Due to the close proximity of Ranolf Street and Fenton Street, the intersections of Ruhi and Toko respectively would be left turn in/left turn out (LTI/LTO) only
- (xii) The two existing entrances into the Rotorua Central site are constructed as T intersections
- (xiii) The intersections of Herewini and Eason streets with Victoria are closed off with cul-de-sac heads being constructed on Herewini and Eason
- (xiv) The alignment crosses Fenton Street, through the existing Big Fresh site and curves to the south east to join the existing alignment of Te Ngae Road in the vicinity of the NIWA building
- (xv) For this option the intersection of Victoria and Fenton has a roundabout; this has a significant impact on the new motel on the southwest corner of Victoria/Fenton
- (xvi) The alignment follows Te Ngae Road before curving to the east to join the existing SH 30A at a roundabout intersection where the eastern arterial also connects
- (xvii) A cul-de-sac head is constructed on Te Ngae Road to the north west of the alignment and on Ti Street to the west of the alignment
- (xviii) We have shown the intersection of Malfroy/Fenton/Malfroy extension as a roundabout.
- (xix) The alignment of Malfroy extension follows along the rear of the Ti Street properties and joins the new SH 30A at a 5 legged roundabout intersection with the eastern arterial, SH 30, and the old SH 30A

### All Options

The drawing labeled "All Options" appended to the letter of 4 September 2003 from Ingrid Snyman (Policy Planner for Rotorua District Council (File Ref: 69-01-233)) was a combination of Options 1 to 4 superimposed on each other.

### Options 5 to 7 (Drawing not included)

### Option 5 (Drawing not included)

Option 5 approximately follows the alignment, and the majority of intersection treatments, described for Option 2, with the following exceptions:

- (i) The signalised intersection with Pukuatua Street incorporates three right turn signal controlled lanes for the eastbound turn from Pukuatua to the arterial and two free left turn lanes from the arterial to Pukuatua Street. Eastbound through traffic on Pukuatua Street has a slip lane while westbound through and left turn traffic is signal control
- (ii) The alignment passes through the St John Ambulance building and joins Ranolf Street (opposite Victoria Street) at a signalised intersection
- (iii) Roads crossed by the arterial do not have direct connection to the arterial and are turned into cul-de-sac heads. This affects Pererika, Pretoria, King, and Elizabeth
- (iv) The intersections of Ruhi, Union, and Toko are left turn in left turn out only and the intersections of Herewini and Eason streets with Victoria are closed off with cul-de-sac heads being constructed
- (v) A relatively wide solid median is constructed along the length of Victoria Street with right turns into and out of Rotorua Central being permitted
- (vi) The eastern end of Victoria Street joins Fenton Street at a signalised intersection
- (vii) The alignment continues eastbound across the Big Fresh car park before joining Old Te Ngae Road and continuing to a large roundabout on the existing SH 30A
- (viii) The intersection of Malfroy and Fenton is a two-lane roundabout with the alignment of Malfroy Road extending to the east beyond Fenton and running parallel to Ti Street before joining the large roundabout at SH 30A.

Encroachment into the Rotorua Central property varies from the 7.4 metres approximately midway along Victoria Street up to 12.1 metres at the eastern end to accommodate additional traffic lanes for the intersection.

### Option 6 (Drawing not included)

Option 6 is similar to Option 5 with the following exceptions:

- (i) The median along Victoria Street is a narrow median that allows no right turns. Therefore, the left turn in left turn out controls on Ruhi, Union, and Toko remain and the two intersections of Victoria Street with Rotorua Central become LTILTO as well.
- (ii) Due to the narrowing of the central median encroachment into Rotorua Central is reduced.

### Option 7 (Drawing not included)

Option 7 retains the narrow central median along with Victoria Street, however, the following changes are made to intersections:

- (i) A left turn slip lane allows eastbound traffic to exit the arterial south of Eruera Street and join the existing SH 30A alignment at a T

- intersection that would be positioned between Eruera and the south end of Whakatau Street
- (ii) Whakatau Street would be opened at the southern end to provide an intersection with the existing SH 30A
  - (iii) The western end of Eruera Street is connected to the existing SH 30A alignment to the south. A cul-de-sac head is constructed to the west of this linkage to provide access to the three properties on the northern side of Eruera Street whose access is affected
  - (iv) The intersections of Ruhi, Union, and Toko with Victoria are closed and the northern ends of these roads turned into cul-de-sac heads.
  - (v) The intersections of Herewini and Eason are opened to become LTILTO intersections.

### Options 8 to 10

These options are a continuation of the development of options for the Victoria Street Arterial. The key features of these options are the inclusion of a pedestrian/cycle bund along the southwestern side of the alignment from Pukuatua Street through to Ranolf Street and alternatives to the median between Ranolf Street and Fenton Street.

The features of the bund are as follows:

- (i) Top of bund is 4.0 metres wide with a 2.0 metre wide shared cycle path/footpath
- (ii) Bund height is 2.0 metres
- (iii) Side slopes on bund are 45 degrees (1:1)
- (iv) Handrails are provided along each side of the cycle path/footpath
- (v) Ramps with slopes of 1:14, to provide access to/from the bund, are provided at Pererika, Elizabeth, King, and Ranolf
- (vi) There is no access from the bund onto the arterial itself.

The following paragraphs briefly describe the median related features of each option. Plans of Options 8, 9 and 10 are included after these descriptions.

### Option 8

Has a continuous 1.2m median from Ranolf Street intersection to Fenton Street intersection with left turn in and left turn out (LTILTO) intersections at Herewini Street, Eason Street and both accesses to Rotorua Central.

### Option 9

Has a 4.7m median from Ranolf Street intersection to Fenton Street intersection with LTILTO intersections at Herewini Street and Eason Street. The two intersections for Rotorua Central allow for all turning movements in and out of the property.

With this option there is the possibility that some light vehicles may attempt to drive across the arterial from Herewini (or Eason) into Rotorua Central (or vice versa).

### **Option 10**

Has a 4.7m median from Ranolf Street intersection to Fenton Street intersection with LTILTO intersections at Herewini Street and Eason Street. Rotorua Central has one intersection with the Victoria Arterial and this allows all turning movements.

The provision of a single entrance into Rotorua Central reduces the number of potential conflict points between vehicles turning in and out of Rotorua Central and through traffic on the arterial. The single entrance also means it is unlikely that vehicles will attempt to drive across the arterial from Herewini (or Eason) into Rotorua Central.

### **Preferred Option**

Option 8 has been identified as the preferred option for the Victoria St Arterial.