

## Queenstown Improvements SH6A & SH6 Corridor

### Construction

Construction 2022-2024

#### Road, Busway or Shared Path

New roundabout and intersection upgrades, bus priority lanes/signals, Frankton bus hub and shared path underpass

Do Intervention	Units	Emissions Factor Unit	Sources and notes
<b>Material Quantities Estimate</b>			
Construction Fuel Use Diesel	96,939 L	0.0027 tCO2e/L	MfE 2020
Construction Materials Concrete	3,281 tonnes	0.11 tCO2e/tonne	AECOM derived factor (See assumptions I
Steel	59 tonnes	2.85 tCO2e/tonne	MfE 2020
Road Surface Crushed rock or recycled material	0 tonnes	0.0032 tCO2e/tonne	IS Calculator NZ v2.0
Gravel	95,160 tonnes	0.0182 tCO2e/tonne	IS Calculator NZ v2.0
Bitumen	0 tonnes	0.3966 tCO2e/tonne	IS Calculator NZ v2.0
Asphalt	4,234 tonnes	0.0542 tCO2e/tonne	IS Calculator NZ v2.0
Project Breakdown Total	2,752 tonnes of CO2e		
<b>Calculated Emissions</b>			
Best estimate of calculated emissions	2,752 tonnes of CO2e		

#### Assumptions

Emissions for construction have been calculated from data provided by Waka Kotahi for this project. When possible assumptions have been made in a consistent manner to ensure comparability between projects.

Refer to construction schedule worksheet for indicative schedule of quantities of concrete, steel, aggregates, gravels and fuels used during construction.

Based on previous research for Waka Kotahi, only emissions from the largest emission sources from construction of infrastructure projects have been estimated (concrete, steel, aggregates, asphalt, and on-site fuel use).

Materials and works related to bridge abutments have been included where relevant.

Fuel used in the construction is assumed to be 2 litres of diesel for every m3 of earth works (AECOM derived fuel-use ratio).

The following were not included in the estimate: fuel used in quarrying activity; emissions from the transportation of construction materials to/from site.

Emission factors are sourced from MfE's 2020 Guide (see link below) where appropriate, or from the ISCA-IS Calculator v2.0.

<https://environment.govt.nz/publications/measuring-emissions-detailed-guide-2020/>

The ISCA-IS Calculator v2.0 is available for ISCA members at <https://www.isca.org.au/Tools-and-Resources>

The emission factor for concrete is based on MfE 2020 guidance and is based on a standard concrete mix.

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TE MANATŪ WAKA MINISTRY OF TRANSPORT

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## Construction Schedule

**Source:** Extracted from following files provided by WK (sourced from DBE prepared in late 2020):  
 SH6 Grant Rd to Kawarau Falls Bridge Bill of Quantities.xls  
 SH6 Ladies Mile Bill of Quantities.xls  
 SH6A Bill of Quantities.xls

	Material	Unit	Material	Unit	Material	Unit	Material	Unit	Material	Unit
	Concrete	t or m3	Steel	t or m3	Asphalt	t or m3	Aggregates	t or m3	Fuel	l or kg
Elemental Breakdown-General	557.45	t	22.8104	t	2007	t	36900	t	33970	l
Ladies Mile Bus Lane	0.72	t	0	t	136.8	t	3096	t	2736	l
Elemental Breakdown - Rbt 4lane G	42.725	t	2.18	t	1541.25	t	25074	t	23500	l
Supporting Infrastructure	0	t	0	t	28.5	t	136.8	t	1206	l
SH6-6A Signals	42.725	t	2.18	t	0	t	24750	t	16860	l
Shared Path	2437.5	t	0	t	182.175	t	874.44	t	8697.2	l
Yewlett to Marina Widening	200	t	0	t	69.75	t	694.8	t	2176	l
Marina Dr Signals	0	t	2.7	t	22.5	t	151.38	t	2016	l
Marina West Int Signals	0	t	2.07	t	23.25	t	216	t	1170	l
Middleton RD EB Bus Stop	0	t	0	t	4.3875	t	150.3	t	242	l
McBride St Int	0	t	2.91	t	2.8125	t	13.5	t	355	l
Battery Hill Ped Signals	0	t	0.93	t	11.6625	t	110.7	t	129	l
Middleton Rd to Battery Hill	0	t	0	t	12	t	57.6	t	193	l
Goldfield Hts Signals	0	t	18.5025	t	0.83025	t	45.9	t	41.6	l
Goldfields to Larch Hill Bl	0	t	0	t	0	t	0	t	0	l
Larch Hill Ped Signals	0	t	0.93	t	2.25	t	10.8	t	300	l
Henseman Rd Int Signals	0	t	3.045	t	8.4375	t	40.5	t	495	l
West Hensman Bus Stops	0	t	0	t	145.875	t	2190.6	t	1552	l
Oaks Club Ped Signals	0	t	0.93	t	9.375	t	163.8	t	640	l
Punamu Bus Stops	0	t	0	t	24.825	t	483.3	t	660	l
<b>Total</b>	<b>3281.12</b>	<b>t</b>	<b>59.1879</b>	<b>t</b>	<b>4233.68</b>	<b>t</b>	<b>95160.4</b>	<b>t</b>	<b>96938.8</b>	<b>l</b>