Penlink	Summary			
Road/Shared Path	New 7 km two lane road with share	ed path; capacity t	o expand to fo	ur lanes; 540 m bridge Weiti River
		Assessment		
General Project Information	ı	period	Units	Assumptions and notes
Construction Start Construction Finish Date	2022 2026			Opening year
Oo Minimum				Existing SH1/Twin Coast Highway/Whangaparoa Road
ane kilometres nfrastructure Type	0 Road, Busway or Shared Path		km	
Emissions				
Construction Lumulative Enabled Total Emissions per Lane Kilometre	63,225,835	2028-2048	tCO2e tCO2e tCO2e/lane km	Cumulative enabled 'Do Minimum' emissions over period (see enabl. d workshe Not applicable for this project (project comprises bridges and on ramps)
Jo Intervention				Do Minimum + New Penlink
Road Length Number of vehicle lanes Number of shared paths	7 2 1		km	Length of road of which the construction emissions are estimated Total number of lanes in each free fon Shared pathway
ane kilometres nfrastructure Type	Road, Busway or Shared Path		km	Road length multiplied by the umber of lanes
Emissions				(V) (O)
Construction Cumulative Enabled	158,189 63,221,380		tCO2e tCO2e	Total estimated construction emissions. See Construction worksheet. Cumulative nabled 'Do Intervention' emissions over period (see Enabled works
Emissions Summary				14 KA
Construction	158,189	I		Total estimated construction emissions. See Construction worksheet.
Enabled Emissions CHANGE IN EMISSIONS, in 20 years	2028-2048	1	76,	S e assumptions on enabled worksheet
Oo Minimum Cumulative Enabled emissions Oo Intervention Cumulative Enabled emissions Cumulative Change in Enabled emissions (2028-2048)	63,225,835 63,221,380 -4,455	I 🔏	tCO2e tCO2e tCO2e	Change in emissions as result of implementing intervention
Project Information Summary		. ()		
no minimum All traffic (including buses) using existing SH1/To Intervention Traffic can use existing road or Penlink (alter construction emissions have been calculated based on scheduchanges in enabled emissions arise from use of shorter route he enabled assessment does not include any calculation of an enabled assessment does not enabled assessm	rnate, shorter, link between SH1 and Wha le of quantities from reference design u with reduced congestion on existing ro	for cost estimat . ared path.	je.	



TE MANATO WAYA MINISTRY OF TRANSPORT

Penlink

From cycling

From walking

ENABLED EMISSIONS

Road/Shared Path

Units Do Minimum **Calculated Emissions** Annual 3,613,362 3,361,483 2,308,839 tCO2e From vehicle journeys 0 tCO2e From public Transport

0 tCO2e 2,308,839 tCO2e 3,613,362 3.361.483 Total **Cumulative calculated Emissions** 28,351,610 33,225,835 tCO2e 34,874,224 From vehicle journeys 0 tCO2e From public Transport 0 tCO2e From cycling From walking tCO2e 34,874,224 28,351,610 63,225,835 tCO2e

Do Minimum Total Emissions 63,225,835 2028-2048

Do Intervention **Calculated Emissions**

Annual From vehicle journeys 3,612,650 3,360,370 2,310,885 tCO2e From public Transport 0 tCO2e 0 tCO2e From cycling 0 tCO2e 3,612,650 3.360.370 2,310,885 tCO2e Total

Cumulative calculated Emissions 3,221,380 tCO2e From vehicle journeys 34,865,103 28,356,277 0 tCO2e From public Transport 0 tCO2e From cycling tCO2e From walking 34,865,103 28,356,277 63,221,380 tCO2e

63,221,380 Intervention Total Enabled Emissions 2028-2048 tCO2e

CHANGE in emissions 2,046 tCO2e Cumulative calculated enabled emissions Do minimum vehicle journey emissions 34,874,224 28,351,610 63,225,835 tCO2e Do intervention vehicle journey emissions 34,865,103 28,356,277 63,221,380 tCO2e Cumulative change in vehicle journey emissions -9,121 4,667 -4,455 tCO2e

Assumptions and notes

Existing SH1/Twin Coast Highway/Whangaparoa Road

0 tCO2e

Data supplied by Beca via email 4Aug21. File VEPM 6 2 Penlink forWK.xlsm

Do Minimum + Penlink

Data supplied by Beca (see table above NoToll scenario).

Total cumulative enabled emis

Change in e

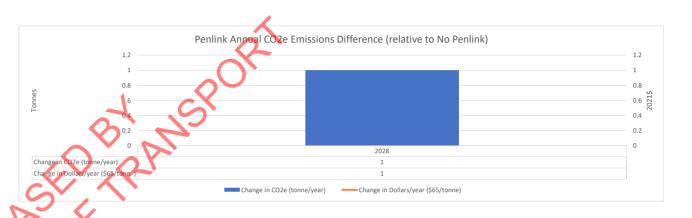
References

Source of emissions factors for enabled emissions is the Vehicle Emission Prediction Model VEPM6 2

https://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/air-quality-climate/planning-and-assessment/veh

Annual CO2-e (tonnes)

	Do_Minimum	Penlink (NoToll)	Penlink (Toll)	NoToll-DM	Toll-NoToll	Toll-DM
2028	3,613,362	3,612,650	3,605,783	- 712	- 6,868	- 7,579
2038	3,361,483	3,360,370	3,355,275	- 1,113	- 5,095	- 6,208
2048	2,308,839	2,310,885	2,308,971	2,046	- 1,915	131

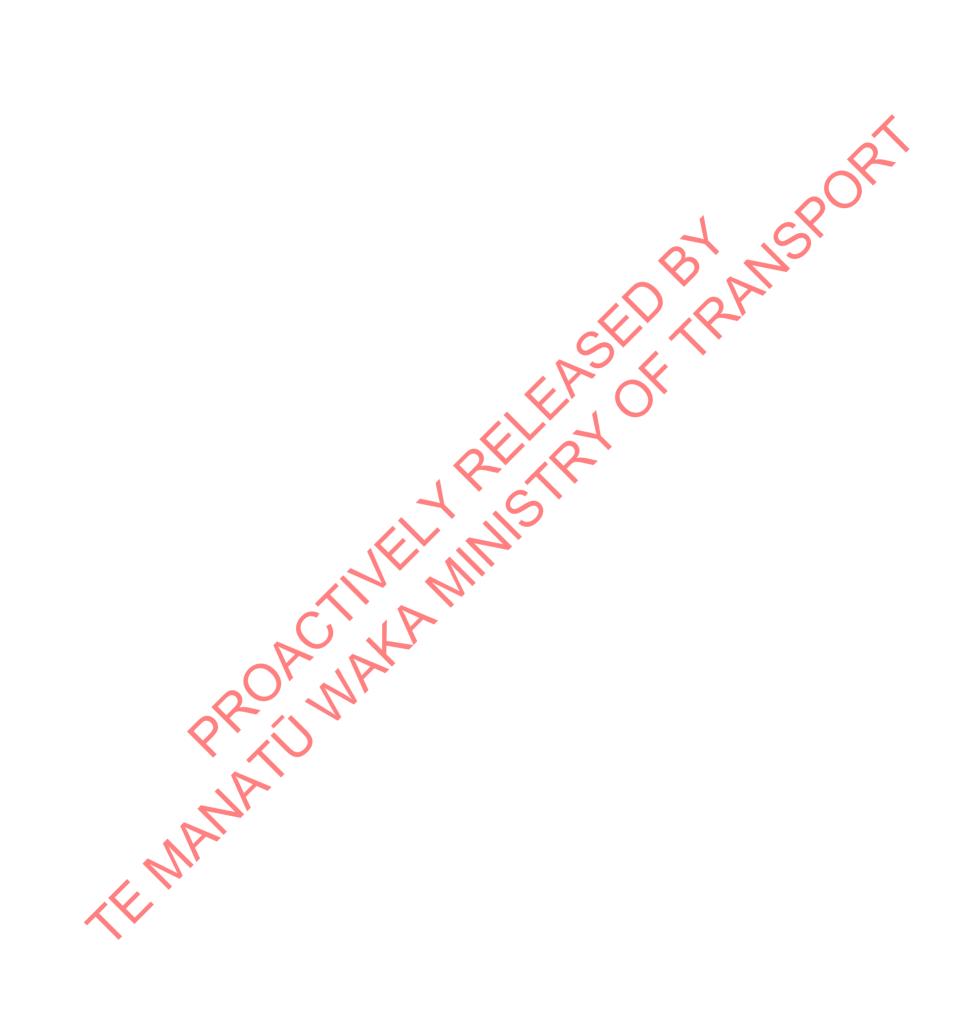


Guideline and Supporting information on methodology for transport modelling

Waka Kotahi Guidelines for transport model development

Research Report 659 Urban transport modelling in New Zealand – data, practice and resourcing

Name of Project	NZUP Penlink
Traffic Consultant	Beca Limited
Report (if available)	
Model Software	EMME https://www.inrosoftware.com/en/products/emme/
	Auckland Regional Macro Strategic Model (MSM) plus refined EMME project model for
	traffic Assignment and delays
Model	MSM model extent -See http://www.aucklandforecastingcentre.org.nz/
	The MSM model was satisfactorily validated to a base year of 2016, with International peer
	review. The local EMME traffic assignment model was validated to 2018 local conditions
Model validation	with peer review from Flow Transportation Ltd
	Do minimum and with Project (Toll and No toll) for 2028, 2038, 2048+, using regional Land
Time horizons and growth assumptions	Use forecasts Scenario I11.6. The same land use inputs were used with and without
3	PENLINK in place
	4
	The modelling assumed growth in the adjacent greenfield growth areas of Silverdale West,
	Wainui and Dairy Flat, with supporting transport networks assumed as per the SGA
	recommended network. Key assumptions for this analysis include SH1 widening between
Network assumptions and	Albany and Silverdale in the 2048 models, along with a new rapid transit network through Dairy Flat and Silverdale West. Previous anlays on PENLINK has shown that wider
interdependencies	network effects are sensitive to assumptions on widening of SH1. Other project
	assumptions included in later-year models include connections between Penlink and East
	Coast Road via Jackson Way (as per SGA network) and an expansion of the Redvale
	interchange to include north-facng ramps and a link west to Dairy Flat growth area.
Model Scenario Assumptions	The Do Minimum network retained the same land use and network assumptions in the
industric Accumpliance	wider network as the Project scenario, but excluded the Penlink project. Alternative access
Do Minimum	points for some developments off East Coast Road were required without Penlink
Model Scenario Assumptions	
·	Option scenarios for Penlink were tested with and without tolls. Both scenarios included
Do Intervention/With Project	bus service on Penlink between Whangaparaoa and North Shore
	Induced traffic was included, via the MSM multi-modal model responses. These include
Induced Traffic	mode shift, trip re-distribution and trip re-timing
	The method used is the same as the Auckland Forecasting Centre (AFC), whereby VEPM
Interface with Vehicle Emission	is used to get emissions rates (g/km) for each 1km speed band between 10 and 100 kph.
Prediction Model (Where relevant)	Those rates are then applied to each individual link in the model based on its estimated speed, and separately for cars, trucks and buses
(
	The emissions on each link are then summed across the whole network. As noted above, the results of this emissions analysis are dependent on a range of inputs
	and assumptions, including fleet composition (as assumed in VEPM 6.2), growth inputs (as
	per regional growth forecasts) and wider network assumptions (generally adopted from
General assumptions/Limitations	ATAP). This analysis only extended to the year 2048, meaning the full growth in the
() '	adjacent Dairy Flat area is not captured. Additionally, the effect of tolling depends on the
	tolling strategy adopted and local users response to tolls.
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RELIER OF TRANSPORT

CONSTRUCTION EMISSIONS

Expected construction 2022-2026

Road/Shared Path

	Units	Emissions Factor Unit	Sources and notes
Do Intervention			
Material Quantities Estimate			2
Construction Fuel Use			OK.
Diesel	22,268,100 L	0.0027 tCO2e/L	MfE 2020
Construction Materials	050.000		45004 1 · 16 · 10
Concrete	656,980 tonnes	0.11 tCO2e/tonne	AECOM derived factor (See assumptions below)
Steel	4,410 tonnes	2.85 tCQ2e/tonne	MfE 2020
Road Surface			
Crushed rock or recycled material	0 tonnes	0.0032 tCO2e/tonne	IS Calculator NZ v2.0
Gravel	671,590 tonnes	0.0182 tCO2e/tonne	IS Calculator NZ v2.0
Bitumen	0 tonnes	0.3966 tCO2e/tonne	IS Calculator NZ v2.0
Asphalt	22645 tonnes	0.0542 tCO2e/tonne	IS Calculator NZ v2.0
· ·		1 6	
Project Breakdown Total	158,189 tonnes of CO2e		
Calculated Emissions		WE'ME.	
Best estimate of calculated emission	158,189 tonnes of CO2e	CILA!	

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

Penlink Construction Schedule

Source:	Penlink Project 100% Reference Design - Cost Estimate	Report 7	7 May 2021 ((I	Refined Align	ment) (up	dated ear	thworks q	uantities 4/5/	'2021)); a	s provided b	y WK.	i.		<u> </u>
Schedule of I	Prices			Material	Unit		Unit		Unit	Material	Unit	Material	Unit	
Code 1	Description Environnmental compliance	Unit	Quantity	C ncrete	t rm3	Steel	t rm3	Asphalt	t rm3	Aggregates	t rm3	Fuel	l rkg	Assumpti ns/ N tes
1.1	Implementation and maintenance of environmental erosion and sediment control measures (temporary sediment ponds silt fences etc)	%	5.0%											
1.2	Monitoring and implementation of temporary mitigation measures Noise and Vibration Mitigation - During Construction	LS LS	1.00											N/A N/A
1.4	Dust Mitigation - During Construction (road sweeper 2 nights per week during 3 x earthworks season)	Days	186.00											N/A
1.5	Other Environmental Compliance	LS	1.00											DVO.
2.1	SITE CLEARANCE Private Land Accommodation Works													
2.1.1.1	A low for all interfacing works with private properties (driveway regrades fencing etc)	No	24.00											N/A
2.1 2 2.1 2.1	Stormwater Decommissioning Remove or Abandon existing stormwater network	LS	1.00											N/A N/A
2.1 3 2.1.3.1	Barriers Remove all barriers (w-section wire rope and terminal ends) along SH1	LS	1.00											N/A
2.1.4	Signs, Lights, and Services	LS	1.00											N/A N/A
2.1.4.1	Remove and dispose a l redundant signs lighting call boxes Removal of lighting columns luminaires and bases dispose or reuse	LS LS	1.00											N/A
2.1.4.3	Remove and dispose all redundant utility service covers boxes	LS	1.00											N/A
2.1.4.4	chambers and lids Remove and dispose a l redundant cables and conduit as required	LS	1.00											N/A N/A
2.1.5 2.1.5.1	Roading Remove Kerb and Channel and Edge beam	LS	1.00											N/A N/A
2.1.5.2 2.1.5.3	Remove Traffic Island at Whangapararoa Road Remove and dispose a l edge marker posts	LS LS	1.00 1.00									4		N/A N/A
2.1.5.4 2.1 6	Remove redundant Ara Weiti Road (200mx 15m x 0.3m deep) Site Clearance	m3	900.00									1 800.00	L	assume 21/23
2.1 6.1 2.1 6.2	Remove kerbs islands Clear heavy vegetation including trees stumps and roots	days days	5.00 40.00										•	
2.1 6.3 2.2	Clear site remove surface vegetation buildings signs EARTHWORKS	m2	1 140 000.00									1 14 0 0.00	L	ssume 2 m3 and 0.5m depth
	Total Earthworks volume Total Cut	m³	2 450 991.07 1 646 565.23									4 9 82.14 3 293 130.46		assu e 2l/m3 sume 2l/m3
	Total F II volume Topso I volume	m³	804 425.84 81 490.60								1	1 608 851.68 162 981.20	L	assume 2l/m3 assume 2l/m3
	Cut volume less topsoil Cut to waste	m ³ m ³	1 565 074.63 1 036 203.23 531 548.17								/ >	3 130 14 26 2 072 406.46	L	assume 2l/m3 assume 2l/m3
	Cut to f II Imported fill	m³	272 889.97									1.0 3.096.34 545, 79.95	L	assume 2l/m3 assume 2l/m3
2.2.1	Earthworks surface area Topso I Stripping Stripping topsoil stackello posito (200mm)	m² m²	271 635.34						_	7		54 32 07	-	assume 2l/m3. Assume 0.1m depth
2.2.1.1	Strip and remove topsoil stockpile onsite (300mm) Topso I disposal management	m³	271 635.34 81 490.60							>	_	162,981.20 162 981.20	L	assume 2l/m3 and 0.3m depth assume 2l/m3
2.2 2	Cut to Waste (%) Cut to waste total Zone 1	% m3 m³	68% 1 036 203.23 10 039.78					<		- 4		2 072 406.46	L	assume 2l/m3 Used total above
2.2 2.2 2.2 2.2 2.3	Zone 1 Zone 2 Zone 3	m³ m³	8 684.33							4				Used total above
2.2 2.4	Zone 3 Zone 4 Zone 5	m³	339 211.93 86 530.67						•	_				Used total above Used total above
2.2 2.6 2.2 2.7	Zone 6 Zone 7	m³	544 082.12 47 654.39											Used total above Used total above Used total above
2.2 2.8	Onsite tip site management preparation Tip fee to Waste Management (Redvale Landfil) - quote \$5/tn	m³ m³	200 000.00 836 203.23			-	/	Y	X					Used total above Used total above Used total above
2.2 3	Cut to Fill (%) Cut to f il total	% m³	32% 531 548.17			1			1			1 063 096.34		assume 2l/m3
2.2.3.1 2.2.3.2	Zone 1 Zone 2	m³	3 713.34		-	1		6						Used total above Used total above
2.2.3.3	Zone 3 Zone 4	m³	3 721.86 113 070.64											Used total above Used total above
2.2.3.5 2.2.3.6	Zone 5 Zone 6	m³	46 593.44 292 967.30					7						Used total above Used total above
2.2.3.7	Zone 7 Crusher to grade cut ECBF material	m³	71 481.59 292 967.30	- 17										Used total above Used total above
2.2.3.9 2.2.4	A low for ime stabilisation cut to fill material (20%) Imported Fill	m³ m3	106 09.63 272,889.97	7	•									Used total above
2.2.4.1	Zones 1 and 2 (SH1) Supply and deliver imported engineered fi Type A (GAP65) - 25%	m3 m³	19,056 86 4 4.22	1		1	*			8 575.59	t			Assuming density of aggregate of 1800kg/m3 (CI Al
2.2.4.2	Supply and deliver imported engineered fi I (SPR/ROP) - 60% Supply and deliver imported engineered fi I Type C (GAP100) for raft f II	m³	1 434 2 2 858.53		1					20 581.41	t			Assuming density of aggregate of 1800kg/m3 (CI Al
2.2.4.4	(15%) Place and compact imported fi I	m³	19 0 6.86		Y					5 145.35	t	38 113.72	L	Assuming density of aggregate of 1800kg/m3 (CI Al assume 2l/m3
2.2.4.5	Zone 3 (Ara Weiti Road) Supply and deliver imported engineered fi I Type A (GAP65) - 25%	m3	38, 3.92 9 575.98	. 1	_					17 236.77	t			Assuming density of aggregate of 1800kg/m3 (CI Al
2.2.4.6	Supply and deliver imported engineered fi I (SPR/ROP) - 60% Supply and deliver imported engineered fi I Type C (GAP100) for raft III	m ³	22 982.35 5 745 6 9							41 368.24	t			Assuming density of aggregate of 1800kg/m3 (CI Al
2.2.4.8	(15%) Place and compact imported fi I)'	38 03.92	1						10 342.06	t	76 607.85	L	Assuming density of aggregate of 1800kg/m3 (CI Al assume 2l/m3
2.2.4.9	Zones 4, 5, 6 (Ara Weiti Road) Supply and deliver imported engineered fi Type A (GAP65) - 25%	m3 m3	166 580 87 41 6 5.22 99 48 52	4						74 961.39 179 907 34	t			Assuming density of aggregate of 1800kg/m3 (CI Al
2.2.4.10	Supply and deliver imported engineered fi (SPR/ROP) 60% Supply and deliver imported engineered fi Type C GAP100) for raft f	m ²	24 987.13							.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				Assuming density of aggregate of 1800kg/m3 (CI Al
2.2.4.12	(15%) Place and compact imported fi I Zone 7 (Whanganarana Road)	m3	166 580.87 48,948.32							44 976.83	1	333 161.74	L	Assuming density of aggregate of 1800kg/m3 (CI Al assume 2l/m3
2.2.4.13 2.2.4.14	Zone 7 (Whangaparaoa Road) Supply and deliver imported engineered fi Type A (GP65) - 25% Supply and deliver imported engineered fi (SPR/ROP) - 60%	m³ m³	12 237.08 29 68.99							22 026.74 52 864.19				Assuming density of aggregate of 1800kg/m3 (CI Al Assuming density of aggregate of 1800kg/m3 (CI Al
2.2.4.15	Supply and deliver imported engineered if I Type C (GAP100) for raft f II (15%)	m³	7 342.25							13 216.05	t			Assuming density of aggregate of 1800kg/m3 (CLA)
2.2.4.16 2.2 5	Place and compact imported fi I Temporary slope stabilisation	m3	48 948.32									97 896.64	L	assume 2l/m3
2.2.5.1 3	Supply and place mulch or hydroseeding Ground improvements	m²	271 635.34											
	DSM Standard 1m dia x 25m deep 3m x 10m g ld 1MPa RATE ONLY	m2												
	DSM Increased Density 1m dia x 25 deep 2m m grid MPa - RATE ONLY	m2												
3.1	Supply Install and Monitor P meter and other instrumentation	LS	1.00											
3.2 3.2.1	Deep Soil Mixing - Standard ID1 - CH-14 to 50	m2	2 688.00	26 880.00										Assumed 8m depth 50% concrete ratio to soil
3.2 2 3.2.3	ID4 - CH1207 - 12 4 ID5A - CH129 413	m2 m2	3 828.00 3 212.00	38,280.00 32 120.00										Assumed 8m depth 50% concrete ratio to soil Assumed 8m depth 50% concrete ratio to soil
3.2.4	ID7B - CH2 41-2286 ID8 - CH 57 2861	m2 m2	14 210.00 13 489.00	142 100.00 134 890.00									Ė	Assumed 8m depth 50% concrete ratio to soil Assumed 8m depth 50% concrete ratio to soil
3.2 6 3.2.7	ID9 - CH3255-3 ID10A - CH3438-3484	m2 m2	6 786.00 4 140.00	67 860.00 41 400.00										Assumed 8m depth 50% concrete ratio to soil Assumed 8m depth 50% concrete ratio to soil
3.2 8 3.3	ID10B - CH3615-3657 Deep Soil Mixing - Increased Density	m2	2 688.00	26 880.00										Assumed 8m depth 50% concrete ratio to soil
3.3.1 3.3.2	ID5 - CH1293-1439 ID6 - CH1640 - 1746	m3 m3	2 044.00 2 968.00	2 555.00 3 710.00										50% concrete ratio to soil 50% concrete ratio to soil
3.3.3	ID7 - CH2186-2282 ID7A - CH2196-2294	m3 m3	1 440.00 1 862.00	1 800.00 2 327.50										50% concrete ratio to soil 50% concrete ratio to soil
	Preloading	m3	16 120.00											50% concrete ratio to soil
3.4.1	ID2 - CH120 - 82		11 200.00	14 000.00							ļ		1	50% concrete ratio to soil
3.4.1 3.4.2 3.4.3	ID2 - CH120 - 82 ID3 - CH240 - 440 ID10 - CH3465- 653	m3 m3	19 176.00	23 970.00										50% concrete ratio to soil
3.4.1 3.4.2 3.4.3 3.5 3.5.1	102 - CH120 - 82 103 - CH240 - 440 1010 - CH3465 - 653 Undercut 1010 - CH3465 - 653 Undercut 1011 - CH6220-6525 (Assume Sm deep)	m3 m3	19 176.00 64 050.00	23 970.00										No materials just excavation backf II covered below
3.4 3.4.1 3.4.2 3.4.3 3.5	102 - CH120 - 82	m3 m3	19 176.00	23 970.00						142,830.00	t	158,700.00	L	
3.4 3.4.1 3.4.2 3.4.3 3.5 3.5.1 3.5.2 3.5.3 4 4 4.1	102 - CH20 - 82 103 - CH20 - 480 103 - CH20 - 480 103 - CH20 - 480 103 - CH205 - 683 104 - CH205 - 683 105 - CH205 -	m3 m3 m3 m3 m3	19 176.00 64 050.00 15 00.00 79 350.00	23 970.00						142,830.00	t	158,700.00	L	No materials just excavation backf II covered below No materials just excavation backf II covered below
3.4 3.4.1 3.4.2 3.4.3 3.5 3.5.1 3.5.1 3.5.2 3.5.3	102 - CH20 - 82 103 - CH200 - 460 1010 - CH2865 - 653 1011 - CH2820-6525 (Assume 5m deep) 1011 - CH6720-6525 (Assume 5m deep) 1011 - CH672-6690 (Assume 5m deep) Supply and deliver CAPES haddli for undercut Stormwater and drainage	m3 m3 m3 m3	19 176.00 64 050.00 15 00.00	23 970.00						142,830.00	t	158,700.00	L	No materials just excavation backf II covered below No materials just excavation backf II covered below

4.1.4 4.1.5	Supply and install vertical kerb N b Supply and install traffic island Nib	m m	3 445.00 2 082.14											
4.1.5 4.2 4.2.1	Supply and install subsoil drains		21 042.00											
4.3	Supply and install subsoil drains Culvert and Headwalls	m												
4.3.1 4.3.2	Supply and install 375dia RC pipes Supply and install 375dia wingwalls	m ea	295.00 14.00	27.66 11.59	t									Assumed width of 0.375m width and 0.1m depth. Co Standard wingwall at 300 - 675 at 0.828t per headw
4.3.3 4.3.4	Supply and install 450dia RC pipes Supply and install 450dia wingwalls	m ea	395.00 12.00	44.44 9.94										Assumed width of 0.450m width and 0.1m depth. Co Standard wingwall at 300 - 675 at 0.828t per headw
4.3.5 4.3.6	Supply and install 525dia RC pipes Supply and install 525dia wingwalls	m ea	155.00 4.00	20.34 3.31	t									Assumed width of 0.525m width and 0.1m depth. Co Standard wingwall at 300 - 675 at 0.828t per headw
4.3.7 4.3.8	Supply and install 600dia RC pipes Supply and install 600dia wingwalls and safety fence	m ea	345.00 0.00	51.75 8.28										Assumed width of 0.600m width and 0.1m depth. Co Standard wingwall at 300 - 675 at 0.828t per headw
4.3.9 4.3.10	Supply and install 750dia RC pipe	m ea	95.00 4.00	17.81 8.26	t									Assumed width of 0.750m width and 0.1m depth. Co
4.3.11	Supply and install 750dia wingwalls and safety fence Supply and install 900dia RC pipe	m	290.00	65.25	t									Standard wingwall at 600 - 1050 at 2.065t per head Assumed width of 0.900m width and 0.1m depth. Co
4.3.12 4.3.13	Supply and install 900dia wingwall and safety fence Supply and install 975dia RC pipe	ea m	8.00 0.00	16.52 6.75										Standard wingwall at 600 - 1050 at 2.065t per head Assumed width of 0.975m width and 0.1m depth. Co
4.3.14 4.3.15	Supply and install 975dia wingwall and safety fence Supply and install 1050dia RC pipes	ea m	2.00 185.00	4.13 48.56	t t									Standard wingwall at 600 - 1050 at 2.065t per head Assumed width of 1.050m width and 0.1m depth. Co
4.3.16 4.3.17	Supply and install 1050dia wingwalls and safety fence Supply and install 1200dia RC pipes	ea m	6.00 45.00	12.39 13.50	t									Standard wingwall at 600 - 1050 at 2.065t per head Assumed width of 1.20m width and 0.1m depth. Co
4.3.18 4.3.19	Supply and install 1200dia wingwalls and safety fence Supply and install 1350dia RC pipes	ea m	2.00 50.00	12.80 16.88	t									Standard wingwall at 1200 - 1350 at 6.40t per head Assumed width of 1.350m width and 0.1m depth. Co
4.3.20	Supply and install 1350dia wingwalls and safety fence	ea	2.00	12.80	t									Standard wingwall at 1200 - 1350 at 6.40t per head
4.3.21 4.3.22	Supply and install 1600dia RC pipes Supply and install 1600dia wingwalls and safety fence	m ea	135.00 4.00	54.00 32.08	t									Assumed width of 1.600m width and 0.1m depth Co Standard wingwall at 1600 - 1800 at 8.020t hea
4.3.23 4.3.24	Supply and install 1800dia RC pipes Supply and install 1800dia wingwalls and safety fence	m ea	145.00 6.00	65.25 48.12	t t									Assumed width of 1.800m width and 0.1m depth. C Standard wingwall at 1600 - 1800 at 8 0 0t per hea
4.4.1	Permanent Ponds/ Wetlands Pond 1	m3	3 343.00											
4.4.2 4.4.3	Pond 2 Pond 3A	m3 m3	2 889.00 1 85.00											
4.4.4	Pond 3B Pond 4	m3	2 206.00 2 292.00											
4.4.6	Pond 5A	m3 m3	907.00											
4.4.7 4.4.8	Pond 5B Pond 6	m3 m3	2 349.00 209.00											
4.4.9 4.5	Pond 7 Grassed swales	m3	514.00									1		.63
4.5.1 4.5.2	Open channel/ diversion drains Grassed/ treatment swales	m m	9 670.10 30.80				-					0		
4.6.1	Pipes - up to 2m BGL Supply and install aug 450dia RRI Class 2		11 484.00	0.404.0-		400.00						Y)		Colo latina provide d his ACCOM
4.7	Catchpits, Manholes, misc structures	m		2 181.96	I.	436.39						_	7	Calc lation provided by AECOM quantity surveyor
4.7.1 4.7.2	Supply and install 1050dia catchpit MH Supply and install single splay catchpit	ea ea	180.00 96.00	382.50 41.86	t t	6.84	t						Y	Calculation provided by AECOM quantity surveyor Assume mass of 436 kg https / www.hynds.co.nz/w
4.7.3	Supply and install 1050 dia scruffy dome MH at wetlands max 2 DTI	ea	9.00	19.13	t	0.34	t							Calculation provided by AECOM quantity surveyor
4.7.3	Supply and install 375 -600mm headwall with riprap outlet Pavement and surfacing	ea	19.00	15.73	t	2.04				~X		~,	-	Standard wingwall at 300 - 675 at 0.828t per headw
5.1	Pavement	m²	15 567.47					2 225 12		S	T			Assume 0 tm double 4 51/2
5.1.1 5.1 2	Type 1A (Main Alignment) Type B (Main Alignment Interchanges and Turning Lanes)	m²	12 82.00					2 335.12 1 827.30	t C					Assume 0.1m depth, 1.5t/m3 Assume 0.1m depth, 1.5t/m
5.1.3 5.1.4	Type 2A (Overlay) Type 2B (Widening)	m² m²	2 826.72 3 248.82					424.01 487.32	t					Assume 0.1m depth, 1.5t/m5 Assume 0.1m depth, 1.5t/m6
5.1.5	Type 2C (Overlay at interchanges and turning lanes) - on existing pavement	m²	4 198.48		L^{T}			629.7				•		Assume 0.1m depth, 1.5t/m7
5.1 6	Type 2D (Widening at interchanges and turning lanes) - new pavement	m²	2 353.74					353.06		4				Assume 0.1m depth, 1.5t/m8
5.1.7 5.1 8	Type 3A (SH1 Ramp)	m² m²	7 447.97					1 1 7.20						Assume 0.1m depth, 1.5t/m9
5.1.9	Type B (Roundabout) Type 4A (Local Roads)	m²	4 073.96 5 471.51				_	820.73	t					Assume 0.1m depth, 1.5l/m10 Assume 0.1m depth, 1.5l/m11
5.1.10 5.1.11	Type 4B (Local Roads interchanges) Type 5A (CH3300 - 7000)	m² m²	7 781.84 29 687.19				2	4,453.08						Assume 0.1m depth, 1.5t/m12 Assume 0.1m depth, 1.5t/m13
5.1.12 5.1.13	Type 5B (Main alignment and interchange around Duck Ck Rd) Type 6 (Shared Use Path)	m² m²	7 342.91 22 843.67				\leftarrow	1 101.44 3 426 55	t	•				Assume 0.1m depth, 1.5t/m1 Assume 0.1m depth, 1.5t/m15
5.1.14	Type 7 (Bridge)	m²	9 320.51					1,398,08						Assume 0.1m depth, 1.5t/m16
5 1 15		m²	4 114 73		_									Accume 0.1m donth 1.5t/m17
5.1.15 5.1.16	Type 8 (Sha low overlay) Type 9 (Deep overlay - Whangaparaoa Rd)	m² m²	4 114.73 5 146.50		4	1		617.21 77 .98	t					Assume 0.1m depth, 1.5t/m17 Assume 0.1m depth, 1.5t/m18
5.1.16 5.1.17	Type 8 (Sha low overlay) Type 9 (Deep overlay - Whangaparaoa Rd) Type 0 (Penlink - Whangaparaoa Intersection) Subgrade improvement layer (33% pavement area - assume 3% lime	m² m²	5 146.50 5 960.47			1		617.21						Assume 0.1m depth, 1.5t/m18 Assume 0.1m depth, 1.5t/m19
5.1.16	Type 8 (Sha low overlay) Type 9 (Deep overfay - Whangaparaoa Rd) Type 0 (Penlink - Whangaparaoa Intersection) Subgrade improvement layer (33% pavement area - assume 3% lime stabilisation)	m² m² m²	5 146.50 5 960.47 31 401.95			\		617.21 77.98 894.07	t	23 551.46	t			Assume 0.1m depth, 1.5t/m18
5.1.16 5.1.17 5.1.18	Type 8 (Sha low overlay) Type 9 (Dee overlay) Type 9 (Dee overlay-Whangaparaoa Rd) Type 9 (Penilisk-Whangaparaoa Intersection) Subgrade improvement layer (33% pavement area - assume 3% lime stabilisation) Pavement enistatement/ rehabi Itation \$411-1411 membrane relay 0GPA	m² m²	5 146.50 5 960.47					617.21 77 .98	t	23 551.46	t			Assume 0.1m depth, 1.5t/m18 Assume 0.1m depth, 1.5t/m19
5.1.16 5.1.17 5.1.18 5.2 5.2.1	Type 8 (Ba low overlay) Type 0 (Deep overlay) Type 0 (Deep overlay - Whangaparaoa Rd) Type 0 (Deep overlay - Whangaparaoa Intersection) Subgrade improvement type (23% powernet area - assume 3% lime stabilisation	m² m² m²	5 146.50 5 960.47 31 401.95			\ \ \ \	1	617.21 77.98 894.07	t	23 551.46	t			Assume 0.1m depth, 1.5t/m18 Assume 0.1m depth, 1.5t/m19 Assumed 0.5m depth 1.5t/m3
5.1.16 5.1.17 5.1.18 5.2 5.2.1	Type 8 (Sha low overlay) Type 0 (Dee porelay - Whangaparaoa Rd) Type 0 (Dee porelay - Whangaparaoa Intersection) Subgade improvement layer (33% pavement area - assume 3% lime stabilisation) Pavement reinstatement/rehabi italion SH1 - Mill membrane relay 0.GPA Seed tables - local roads (Assume 10m W x 4m L @ 5550/m2) Bridges and gamtries BHDGES	m² m² m² m² No	5 146.50 5 960.47 31 401.95 1 400.00 7.00	3		7	1	617.21 77.98 894.07	t t	23 551.46	t			Assume 0.1 m depth, 1.5/m18 Assume 0.1 m depth, 1.5/m19 Assumed of 0.5 m depth 1.5/m3 Assumed resurfacing of 0.1 m depth 1.5/m3 Assumed resurfacing of 0.1 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5%
5.1.16 5.1.17 5.1.18 5.2 5.2.1	Type 8 (Ba low overlay) Type 0 (Deep overlay) Type 0 (Deep overlay - Whangaparaoa Rd) Type 0 (Deep overlay - Whangaparaoa Intersection) Subgrade improvement type (23% powernet area - assume 3% lime stabilisation	m² m² m²	5 146.50 5 960.47 31 401.95	16 601 40		2 244 24	7	617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1	Type 8 (Sha low overlay) Type 0 (Deep overlay) Type 0 (Peep overlay - Whangaparaoa Rd) Type 0 (Peep low - Whangaparaoa Intersection) Subgade Improvement layer (31% spewment area - assume 3% lime stabilisation Stall - Mill membrane relay 0 GGPA Severla Dels - Look of Tools (Assume 10m W x 4m L @ 5550/m2) Wriges and garantes BHDOLS Bridge total footprint On a ligoment	m² m² m² m² No	5 146.50 5 960.47 31 401.95 1 400.00 7.00	16 691.40	\ \ \ \	2 344.21		617.21 77.98 894.07	t	23 551.46	t			Assume 0 fm depth, 1,50m19 Assumed 0 fm depth, 1,50m19 Assumed 0 fm depth 1,50m3 Allow 2500kg/m3 for concrete and 5% by volume of stee weight 7,500kg/m3
5.1.16 5.1.17 5.1.18 5.2 5.2.1	Type 8 (Sha low overlay) Type 0 (Deep overlay) Type 0 (Peep overlay - Whangaparaoa Rd) Type 0 (Peep low - Whangaparaoa Intersection) Subgade Improvement layer (37% spewment area - assume 3% lime stabilisation) Shil - Mill membrane relay 0 GDFA Secret Dates - Look of Joseph 1 (1997) Shiftight of the Shiftight of Shif	m² m² m² m² No	\$ 146.50 \$ 960.47 31 401.95 1 400.00 7.00 1 4.00 11,508.00 856.00 47.00		\ \ \ \	2 344.21	t	617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1	Type 8 (Ba low overlay) Type 0 (Deep overlay - Whanapaparaoa Rid) Type 0 (Deep overlay - Whanapaparaoa Rid) Type 0 (Deep overlay - Whanapaparaoa Intersection) Sologiade improvement type (23% powernet area - assume 3% lime stabilisation) Statistical control of the stabilisation of t	m² m² m² m² No m² No m² m² m² no m²	5 146.50 5 960.47 31 401.95 1 400.00 7.00 1 4.00 856.00		\frac{1}{2}	2 344.21		617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4	Type 8 (Bat loon overlay) Type 0 (Deep overl	m ² m ² m ² m ² No m2	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 497.00 201.00 384.00 472.00		\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	2 344.21	t	617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5	Type 8 (Bas low overlay) Type 0 (Deep overla	m² m² m² m² No m²	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 856.00 477.00 201.00 472.00 472.00		\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	2 344.21	t	617.21 77.98 894.07	t t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4	Type 8 (Bas low overlay) Type 0 (Deep overla	m ² m ² m ² m ² No m2	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 497.00 201.00 384.00 472.00		>	2 344.21	· ·	617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5	Type 8 (Bas low overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 0 (Deep overlaw) Type 0 (Perlink - Whangaparaoa Intersection) Type 0 (Perlink - Whangaparaoa Intersection) Subject and the property of the stabilisation) Feverenter (reinstatement/ rehabilitation) Stit. Mill membrane relay 0 GPA Societ Libers - Licel orada (Assume 30m W x 4m L @ 5550/m2) Societ Libers - Licel orada (Assume 30m W	m² m² m² m² No m² No m² m² No no m² no m² no no m² no no no m² no	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 856.00 477.00 201.00 472.00 472.00		>	2 344.21	t	617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5	Type 8 (Fab low overlay) Type 9 (Deep overlay - Whangaparaoa Rd) Type - O (Peep low - Whangaparaoa Rd) Type - O (Peerlink - Whangaparaoa Intersection) Type - O (Peerlink - Whangaparaoa Intersection) Subjact in provement layer (31% powernet area - assume 3% lime stabilisation) Pervenent reinstatement/ rehabil itation SH1 - Mill membrane relay 0 GPA Secel Tables - Lord roods (Assume 3 Dm W x 4m 1 @ 5550/m2) Bridges and garatries BRIOGES BRIDGES Bridge total footprint On a ligment Off alicinement BRIO - Bridge 1 - CH 00 bridge over SH1 BRIO - Bridge 1 - CH 00 bridge over SH1 BRIO - Bridge 1 - CH 00 bridge over SH1 BRIO - Bridge 1 - CH 00 bridge over SH1 BRIO - Bridge 1 - CH 00 bridge over SH1 BRIO - Bridge 5 - CH 00 bridge over SH1 BRIO - Bridge 5 - CH 00 bridge over SH1 BRIO - Bridge 5 - CH 00 bridge over SH1 BRIO - Bridge 5 - CH 00 bridge over SH1 BRID - Bridge 5 - CH 00 bridge over SH1 BRID - Bridge 5 - CH 00 Bridge over SH1 BRID - Bridge 5 - CH 00 bridge over SH1 BRID - Bridge 5 - CH 00 bridge over SH1 BRID - Bridge 5 - CH 00 Bridge over SH1 BRID -	m² m² m² m² No m² m² No m² m² no m² m² no m²	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 856.00 477.00 201.00 472.00 472.00		>	2 344.21		617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5	Type 8 (Tab low overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 1 (Deep overlay) Type 2 (Deep overla	m2 m2 m2 No m2 m2 m2 m2 m2 m2 m2 m2 m2 m2	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 856.00 477.00 201.00 472.00 472.00		>	2.344.21	·	617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5	Type 8 (Eab also overlay) Type 0 (Deep overl	m² m² m² m² No m² No m² No m² m² No m² m² no m² no m²	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 856.00 477.00 201.00 472.00 472.00		\frac{1}{2}	2 344.21		617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5	Type 8 (Data low overlay) Type 0 (Deep overl	m² m² m² m² No m² No m² m² No m² m² m² no m²	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 856.00 477.00 201.00 472.00 472.00		Y	2 344.21		617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2.1 5.3 6 6 6 6 6.1 6.2 6.3 6.4 6.5 6.6 7	Type 8 (Bas low overlay) Type 0 (Deap overla	m² m² m² m² No	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 856.00 477.00 201.00 472.00 472.00		Y	2 344.21		617.21 77.98 894.07	t	23 551.46	1			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5	Type 8 (Data low overlay) Type 0 (Deep overlay) Type 0 (Deep overlay - Whangaparaoa Rd) Type 0 (Perlink - Whangaparaoa Intersection) Type 0 (Perlink - Whangaparaoa Intersection) Type 0 (Perlink - Whangaparaoa Intersection) Subgade Improvement layer (31% powernet area - assume 3% lime stabilisation) SH1 - Mill membrane relay 0 GGPA Secret Eables 1- Dott or GMS (Assume 10m W x 4m 1, @ 5550/m2) Wolges and garantes MIDOLS Bridge total footprint On a Igmment Bild 1- Bridge 1- CH1 OD bridge over 5st1 Bild 2- Bridge 2 - CZ20 bridge over 5st1 Bild 2- Bridge 2 - CZ20 bridge over 5st1 Bild 2- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 1- CH1 OD bridge over 5st1 Bild 3- Bridge 3- CH1 OD bridge over 5st1 Bild 3- Bridge 3- CH1 OD bridge over 5st1 Bild 3- Bridge 3- CH1 OD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD bridge over 5st1 Bild 3- Bridge 3- CH1 DOD Bridge over 5st1 Bild 3- Bridge 3- CH1 DOD Bridge over 5st1 Bild 3- Bridge 3- CH1 DOD Bridge over 5st1 Bild 3- Bridge 3	m² m² m² No m² m² No m²	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 856.00 477.00 201.00 472.00 472.00		y	2344.21		617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2.2 5.2.1 5.3.6 6 6 6 6.1 6.2 6.3 6.4 6.5 6.6 7	Type 8 (Bas low overlay) Type 3 (Deap overlay) Type 3 (Deap overlay) Type 4 (Deap overlay) Type 4 (Deap overlay) Type 4 (Deaplat-Whangaparaoa Intersection) Subgrade improvement layer (378; spewment area - assume 3% lime stabilisation) Stabilisation Stabi	m² m² m² ho m² m² ho m²	\$146.50 \$100.77 \$140.00 \$1400.00 \$1,000 \$1,000 \$65.00 \$47.00 \$20,000 \$34.00 \$34.00 \$35.00 \$35.00 \$35.00 \$35.00 \$35.00		7	2 344.21		617.21 77.98 894.07	t	23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5 6.5 7 7.1 7.11 7.12 7.13 7.13	Type 8 (Data Joso overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 1 (Deep over	m² m	\$146.50 \$1960.47 \$1400.00 \$1400.00 \$1,000			23421		617.21 77.98 894.07		23 551.46	t			Assume 0.1 m depth. 1.5/m19 Assumed 5.m depth 1.5/m3 Assumed 5.m depth 1.5/m3 Assumed 6.5 m depth 1.5/m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7.900kg/m3 (460mm thick depth)
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5 6.6 7 7.1 7.1,1 7.1,2 7.1,3 7.1,4 7.1,5	Type 8 (Data low overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 10 (Deep overlay)	m² m	\$146.50 \$196.47 \$1400.00 \$1400.00 \$1400.00 \$1500.00			234421		617.21 77.98 894.07		23.551.46	1			Assume 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed 10 service 1 fm depth 1,50m3 Assumed 0 5m depth 1,50m3 Assumed 10 service 1 fm depth 1,50m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7,500kg/m3 (450mm hick depth) Allow 20% factor
5.1.16 5.1.17 5.1.18 5.2 5.2.1 5.2.1 5.2.1 5.3.6 6 6 6 6 6 6 7 7.1 7.1 7.1 7.1,1 7.1,2 7.1,1 7.1,4	Type 8 (Dea now overlay) Type 0 (Dea now overl	m² m² m² m² No m² m² No m²	5 146.50 5 960.47 31 401.95 1 400.00 7.00 11,508.00 487.00 585.00 10,509.00 10,		Y	2 344.21		617.21 77.98 894.07		23 551.46	t			Assume 0 fm depth 1,58m19 Assumed 0 fm depth 1,58m19 Assumed 0 fm depth 1,58m3 Assumed resurfacing of 0,1m depth 1,58m3 Allow 250Ng/m3 for concrete and 5% by volume of steel weight 7,500kg/m3 (450mm thick depth) Allow 20% factor
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2.1 5.3 6 6 6 6.1 6.2 6.3 6.4 6.5 6.6 7 7.1 7.1,1 7.1,2 7.1,3 7.1,4 7.1,5	Type 8 (Data low overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 0 (Deep overlay) Type 10 (Deep overlay)	m² m	\$146.50 \$196.47 \$1400.00 \$1400.00 \$1400.00 \$1500.00	N	>			617.21 77.98 894.07	t		t			Assume 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed of self-self-self-self-self-self-self-self-
5.1.16 5.1.17 5.1.18 3.2 3.2 3.2 3.2 3.2 6 6 6 7 7.1 7.1 7.1 7.1 7.1 7.1 7.1	Type 8 (Dea now overlay) Type 9 (Deap overlay) Type 9 (Deap overlay) Type 10 (Pealink - Whanagaparaoa Intersection) Type 10 (Pealink - Whanagaparaoa Intersection) Type 10 (Pealink - Whanagaparaoa Intersection) Subgrade Improvement layer (378; sweement area - assume 3% lime stabilisation) Stabilisation	m² m	\$146.50 \$100.77 \$140.00 \$1,000	N				617.21 77.98 894.07			1			Assume 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed of self-self-self-self-self-self-self-self-
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2 5.2 6 6 6 6 6 6 6.1 6.2 6.3 6.4 6.5 6.6 7 7.1 7.1,1 7.1,2 7.1,3 7.1,4 7.1,5 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2	Type 8 (Dea how overlay) Type 9 (Deep overlay - Whanagaparaoa Rd) Type 1 (Deep overlay - Whanagaparaoa Rd) Type 1 (Deep overlay - Whanagaparaoa Rd) Type 1 (Deep overlay - Whanagaparaoa Intersection) Subgrade Improvement byer (378; systement area - assume 3% lime stabilisation) Provement resident of the stabilisation overlay - Resident of the stabilisation overlay - Resident overlay - Reside	m² m² m² hto m² m² hto m²	\$146.50 \$100.00 \$1400.00	N	\$			617.21 77.98 894.07			t			Assume 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed of self-self-self-self-self-self-self-self-
5.1.16 5.1.17 5.1.18 5.1.2 5.2 5.2 5.2.1 5.2.1 5.2.1 5.2.1 5.3.6 6 6 6 6 6 6 6 6 7 7 7.1 7.1 7.1 7.1 7.1 7.1 7.	Type & (Data low overlay) Type & (Deep overl	m² m² m² hto m²	\$146.50 \$146.50 \$140.00 \$1400.00 \$1400.00 \$1500.00	N	\$			617.21 77.98 894.07		13,7 8. 0				Assume 0 tim depth. 1,50m19 Assumed 0 1,50m19 Assumed 10 1,50m19 Assumed 10 5m depth 1,50m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7,500kg/m3 (450mm hick depth) Allow 20% factor
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5.1.16 5.1.18 5.1.18 5.1.18 5.2 5.2 5.2.1 5.2.1 5.2 5.2 6 6 6 7 7 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2	Type of (Dea notwork)	m² m	\$146.50 \$906.77 \$140.00 \$7.00 \$1.1,509.00	N				617.21 77.98 894.07	t	13,7 8. 0	t t			Assume 0 tim depth. 1,50m19 Assumed 0 1,50m19 Assumed 10 1,50m19 Assumed 10 5m depth 1,50m3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7,500kg/m3 (450mm hick depth) Allow 20% factor
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2 5.2 5.2 5.2 6 6 6 7 7.1 7.1 7.1 7.1 7.1 7.1 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3	Type 8 (Dea now overlay) Type 9 (Dea now overlay) Type 1 (Dea now overl	m² m	\$146.50 \$140.00 \$140.00 \$1,	6683 25 457 50 520 00 990 00				617.21 77.98 894.07		13,7 8. 0	t			Assume 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m3 Assumed 0 5m depth 1,50m3 Assumed 0 5m depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed 1 fm depth 1,
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2 5.2 5.2 6 6 6 6 6 7 7.1 7.1 7.1 7.1 7.1 7.1 7.1	Type of (Dea now overlay) Type of (Dealink - Whanagaparaoa Intersection) Type of (Dealink - Whanagaparaoa Intersection) Subgraded improvement byee (TSR systement area - assume 3% lime stabilisation) Towerson overlay overla	m² m	\$146.50 \$140.00 \$140.00 \$1,596.40 \$1,596.40 \$1,596.60 \$1,596	6683.22 457.50 520.00 1770.00				617.21 77.98 894.07		13,7 8. 0	t			Assume 0 fm depth 1,50m19 Assumed 0 fm depth 1,50m3 Assumed 0 5m depth 1,50m3 Assumed 0 5m depth 1,50m3 Assumed 0 5m depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed 0 fm depth 1,50m3 Assumed 1 fm depth 1,
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2 5.2 5.2 6 6 6 6 6 6 7 7.1 7.1 7.1 7.1 7.1 7.1 7.1	Type 8 (Dea now overlay) Type 9 (Deap overlay) Type 10 (Peap now) Type	m² m² m² hto m²	\$146.50 \$140.00 \$140.00 \$140.00 \$140.00 \$15.00 \$	457.60 520.00 1 780.00 1 280.00 1 280.00				617.21 77.98 894.07		13,7 8. 0	t			Assume 0 tim depth 1,50m19 Assume 0 tim depth 1,50m3 Assumed 0 tim depth 1,50m3 Assumed 10 septh 1,50m3 Assumed 10 septh 1,50m3 Assumed 10 septh 1,50m3 Assumed 10 septh 1,50m3 Assumed 0 sem depth 1,50m3 Allow 2500kg/m3 for concrete and 5% by outure of stee weight 7,500kg/m3 (450mm thick depth) Allow 20% factor Allow 20% factor Assume 1 moved 1,50m3 depth 1,50m3 depth 1,50m3 Allow 20% factor Assume 1 moved 1,50m3 depth 1,50m3 dep
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2 5.2 5.2 6.6 6.6 6.7 7.1 7.1 7.1.1 7.1.1 7.1.5 7.2 7.1 7.1.3 7.1.5 7.2 7.1 7.1.3 7.1.4 7.1.5 7.2 7.1 7.1.3 7.1.4 7.1.5 7.2 7.1 7.1.3 7.1.4 7.1.5 7.2 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3	Type 8 (Dea now overlay) Type 0 (Dealink - Whangaparaoa Intersection) T	m² m	\$146.50 \$900.47 \$140.00 \$1.00	457.50 520.00 990.00 1 290.00 1 290.00 1 610.00				617.21 77.98 894.07		13,7 8. 0	1			Assume to 1 midden, 1, 50m19 Assumed 1 midden, 1, 50m19 Allow 2500kg/m3 for concrete and 5%, by olumin of steel weight 7, 500kg/m3 (450mm thick deck) Allow 250% factor Allow 250% factor Allow 250% factor Assumed 1 midden, 1, 50m19, 1, 50m
5.1.16 5.1.17 5.1.18 5.1.18 5.1.2 5.1.3 6.3 6.6 6.6 6.7 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7	Type 8 (Dea notworks) Type 10 (Dea notworks)	m² m	\$146.50 \$146.5	457.50 520.00 1 622.50 1 1 622.50 1 1 525.00				617.21 77.98 894.07		13,7 8. 0	t			Assume 0 fm depth 1.5mm3 Assumed 0.5mm depth 1.5mm3 Assumed 1.5mm depth 1.5mm3 Assumed 1.5mm3 Assumed 2.5mm3 depth 2.5mm3 depth 2.5mm3 Assumed 1.5mm3 Assumed 2.5mm3 depth 2.5mm3 depth 2.5mm3 Assumed 1.5mm4 Assumed 2.5mm3 depth 2.5mm3 Assumed 2.5mm3 Assumd 2.5mm
5.1.16 5.1.17 5.1.18 5.1.2 5.2 5.2 5.2 5.2 5.3 5.3 6 6 6 7 7 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.2 7.2 7.2 7.2 7.2 7.2 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3	Type & (Text International Content of the Content o	m² m	\$146.50 \$146.50 \$146.50 \$140.00 \$1.00 \$1.00 \$1.00 \$2.0	457.50 520.00 990.00 1.770.00 1.862.50 1.862.50 1.862.50 1.862.50 1.862.50 1.862.50		527 37075		617.21 77.98 894.07	t	13,7 8. 0	t t t t t t t t t t t t t t t t t t t			Assume 0 tim depth 1.5mm3 Assumed 10 rideoth 1.5mm9 Assumed 25 mdepth 1.5mm3 Assumed 10 rideoth 1.5mm3 Allow 2500kg/m3 for concrete and 5% by volume of steel weight 7,500kg/m3 (450mm thick deck) Allow 250 fishedor Allow 250 fishedor Assumed 10 rideoth 1.5mm3 Assumed 250 rideoth 1.5mm3 Assumed 10 rideoth 1.5mm3 Assumed 10 rideoth 1.5mm3 Assumed 250 rideoth 1.5mm3 Assumed 250 rideoth 1.5mm3 Assumed 250 rideoth 1.5mm3 Assumed 10 rideoth 1.5mm3 Assumed 10 rideoth 1.5mm3 Assumed 10 rideoth 1.5mm3 Assumed 250 rideoth 1.5mm3 Assumed 250 rideoth 1.5mm3 Assumed 10 rideoth 1.5mm3 A
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2 5.2 5.3 5.3 6 6 6 7 7.1 7.1 7.1.1 7.1.1 7.1.2 7.1.1 7.1.2 7.1.3 7.1.3 7.1.3 7.1.4 7.1.5 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.2 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3	Type & (Dea how overlay) Type & (Deep overla	m² m	\$146.50 \$140.00 \$14	457.50 520.00 990.00 1 767.00 1 1280.00 1 1280.00 1 1282.00 1 1282		627 87075	t t	617.21 77.98 894.07		13,7 8. 0	t			Assume 0 tim depth 1.5mm3 Assumed 10 midel, 1,5mm9 Assumed 10 midel, 1,5mm9 Assumed 10 midel, 1,5mm9 Assumed 10 single 11 single 1 Assumed 10 single 11
5.1.16 5.1.17 5.1.18 5.2 5.2 5.2 5.2 5.2 6 6 6 7 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7	Type & (Dea how overlay) Type & (Deep converse with a support of the property	m² m	\$146.50 \$140.00 \$14	457.50 520.00 1 770.00 1 780.00 1 1280.00 1 1280.00 1 160.00 1 160		527 37075		617.21 77.98 894.07		13,7 8. 0	t	157.50		Assume 0 tim depth 1.58m19 Assumed 0 finders, 1.58m19 Assumed 0 finders, 1.58m19 Assumed 0 finders, 1.58m19 Assumed 0 finders, 1.58m19 Assumed 1 finders, 1.58m19 Assumed 2 finders, 1.58m19 Assumed 2 finders, 1.58m19 Assumed 2 finders, 1.58m19 Assumed 2 finders, 1.58m19 Assumed 1 finders, 1.58m19 Assumed 2 finders, 1.58m19 Assumed 1 finders, 1.58m19 Assumed 1 finders, 1.58m19 Assumed 2 finders, 1.58m19 Assumed 1 finders, 1.58m19 Assumed 2 finders, 1.58m19 As
5.1.16 5.1.17 5.1.18 5.1.2 5.2 5.2 5.2 5.2 5.2 5.2 5.2 5	Type & (Dea how overlay) Type & (Dea powerlay) Type & (Dea powerla	m² m	\$146.50 \$146.50 \$146.50 \$146.50 \$140.00 \$1	457.50 457.50 520.00 990.00 1 1280.00 1 228.00 1 1280.00 1 228.00 1 280.00 1	tttttttt	527 37075		617.21 77.98 894.07		13,7 8. 0	1			Assumed 1 midden, 1,50m19 Allow 250Mg/m3 for concrete and 5%, by olumin of steel weight 7,500Mg/m3 (450mm midden), and 1,50m19 Allow 250Mg/m3 for concrete and 5%, by olumin of steel weight 7,500Mg/m3 (450mm midden), and 1,50m19 Allow 250 functor Assumed 1 midden, 250m2 functor Assumed 1 midden, 250m3 of concrete, Assumed 1,50m3 of concrete

8. TRAFFIC SERV	VICES (BARRIERS, ITS, LIGHTING)													
8.1	Barriers and Transitions													
8.1.1	Supply and install TL4 wire rope barrier (westbound carriageway edge and CL)	m	9 890.00			183.95	t							https://www.ingalcivil.co.nz/products/road-safety-b
8.1.2	Supply and install TL4 wire rope end terminals (average @500m runs)	ea	30			1.00	t							https://www.ingalcivil.co.nz/products/road-safety-b
8.1.3	Supply and install TL4 concrete barrier - northern carriageway adjacent SUP)	m	8 205.00	28 307.25										Assume height of 920 mm width of 1500 mm, http
8.1.4 8.1.5	Supply and install TLS concrete barriers Supply and install TL4 W-section guardrail	m m	100.00 5 632.00	412.50		63.64	t							Assume height of 1100 mm width of 1500 mm, ht 11.3kg/m (https://www.csppacific.co.nz/)
8.1.6 8.1.7	Supply and install TL4 W-section leading terminal Supply and install TL4 W-section trailing terminal	ea ea	20.00 20.00											
8.1.8	Supply and install TL4 W-section guardrail transitions Pavement Markings and Markers	ea	24.00											
8.2.1 8.2.2	Remove existing pavement markings Supply and lay new pavement markings	LS m	1.00 52 200.00											Cookide on Blob. to be immediately board or an in-
8.3	Road Signs and Gantries	- "	32 200.00											Exclude as likely to be immaterial based on previous Exclude as likely to be immaterial based on previous provides a supply of the provides and the provides as a supply of the provides and the provides and the provides as a supply of the provides as a su
8.3.1	Penlink and Whangaparaoa Road Remove and dispose existing traffic signs poles footings	LS	1.00											
8.3.2	Supply and install new traffic signs SH1 Main Carriageway and On/Offramps	LS	1.00											
8.3.3 8.3.4	Supply and install new motorway signs Supply and install VMS signs and poles	LS LS	1.00											
8.3.5 8.3.6	Supply and Install New TMS Cabinets Supply and Install New RMS Count site Controller Cabinet	LS LS	1.00 1.00											
8.3.7 8.3.8	Supply and Install New Roadside Controller Cabinet CCTV & VMS Connection to ATOC main truck line along SH1	LS LS	1.00											
8.3.9	Ramp metering Gantries	LS	1.00											
8.3.10	Supply and install Truss Portal foundations and piles as required (incl signs)	No	2.00	1.25		4.03								Assumed 20m width, 4m height from road to base assumed 60kg/m Assume
8.3.11	Supply and install Tubular Cantilever gantry foundations and piles as required	No	3.00	1.88		6.05								Assumed 20m width, 4m h light from road to base assumed 60kg/m Assume
8.3.12 8.4	Supply and install VMS sign board Traffic Signals	LS	1.00	1.00	Ì	0.00								Total to base assumed constitution in a second
8.4.1	Traffic signals - Whangaparaoa Road intersection	LS	1.00									4		
8.4.2 8.4.4	RMS Loops RMS loops - North Bound Off Ramp	LS	1.00											
8.4.5 8.5	RMS loops - South Bound On Ramp Lighting at intersections, interchange, Whangaparaoa Road, and SUP	LS	1.00										•	
8.5.1	Remove and dispose existing lights	ea	12.00									V		
8.5.2a	Supply and install new lights footings and connection - Type V3 (50m spacing)											V	-	
	NB offramp SB onramp ECR link road Whangaparaoa Road	ea ea	6.00 19.00							_) /	Y	~
8.5.2b	Supply and install new lights footings and connection - Type V4 (50m spacing)													
	Intersection 1 Intersection 2	ea ea	0.00		LΞ					Z				
8.5.3	Duck Creek Road interchange Supply and install new HV transformer	ea ea	11.00 4.00		LΞ					9	∀			
8.5.5 8.5.6	Supply and install new ducting and LV cabling Montrose Boxes	m LS	4 00.00 5.00						-	~	<			
8.5.7 8.5.8	Power Supply and connections Testing and Commissioning	LS LS	1.00 1.00						- N					
8.5.9	Lighting along SUP @30m crs including cabling and conduits - Type PP3	ea	207											
8.5.10 9. UTILITIES	Cabling and conduit for SUP lighting	lm	6 200.00						Y	1	\sim			
	UTILITIES									4				
9.1.1	Vector 2.5km of 11kV overhead cable to be undergrounded from East Coast Rd	LM	2 500.00											
9.1 2	km West of bridge to 350m East of Bridge 11kV and 33kV overhead	LM	1 350.00			-		· _						
9.1.3	A low for separated power supply for shared path and carriageway	LM	6 230.00			1								
	New MP4 150mm dia PE gas main along the corridor to allow for				4	4		G	•					
9.1.4	connection and future supply. Sleeved in 250mm dia PE duct through bridge and under motorway	LM	6 230.00											
9.2	Watercare Relocation of an existing 250 mm PE water distr bution main with													
9.2.1	associated valves runs along the southern side of Ara Weiti Rd from East Coast Road.	LM	1 800.00	1										
9.2 2	Whangaparoa Rd Existing services to be maintained and or relocated	Sum	1.00											
9.2.3 9.3	00mm communication duct for WSL Communications	LM	6 230 00	10		7								
9.3.1 9.3 2	Chorus - 2no comms duct along main corridor including cutover Vodafone - 2no comms duct along main corridor (future proof)	LM LM	46 00 12 460.0		1									
9.4 9.4.1	General Shared use service trench - excavate and backfill													
9.4 2		LM	62 0.00		V	•								
	Utility locating and protection	LM Sum	6 2 0.00 1.00		Y									
10.1	Utility locating and protection NG AND URBAN DESIGN Notes: Open earthworks batters area = 230 000m2	LM Sum	6 2 0.00 1.00 230 000.00	4	3									
10.1 10.1.1	Utility locating and protection No AND URBAN DESIGN Notes: Open earthworks batters area = 230 000m2 LANDSCAPING Topsol treatment	Sum m2	230 000.00 25 000 0	N N	Y							425,000,00		
10.1.1 10.1.2 10.1.3	Utility locating and protection Kos AND URBAN DESIGN Notes: Open earthworks batters area = 230 000m2 LANDSCAPING Topsol treatment Respread topsoil from stocko ie (250mm) Mulching	m2 m2 m2 m2 m2	230 000.00 25 000 0 250,000.0 834 00 00	H	Y							125 000.00		Assume depth of 0.25 m 2t/m3 Exclude as likely to be immaterial based on previo
10.1.1 10.1.2 10.1.3 10.1.4 10.1.5	Utility locating and protection (SAID URBAN DESIGN Notes: Open earthworks batters area = 230 000m2 LNDSCAPING LODGE Treatment LODGE Treat	m2 m2 m2	230 000.00 25 000 0 250,000.0		Y							125 000.00		Exclude as likely to be immaterial based on previon Exclude the second
10.1.1 10.1.2 10.1.3 10.1.4 10.1.5 10.2	Uptility locating and protection 60 AND URBAN DESIGN Notes: Open earthworks batters area = 230 000m2 LANDSCAPINE Topos I treatment Inspect I treatment Respresed toposite from stocksp le (250mm) Weed control/ maintenance Revegetation planting Footpath/ Shared Path/ Cycle Path Supply place and finish concrete footpath/ cycle pat jinchts_(100mm)	m2 m2 m2 m2 m2 m2	230 000.00 25 000 0 25 000.0 834 00 00 977 0 0.00 2 0 000 00		Y							125 000.00		Exclude as likely to be immaterial based on previor Exclude as likely to be immaterial based on previor Exclude as likely to be immaterial based on previor Exclude as likely to be immaterial based on previor previor to the immaterial based on previor to the immaterial based on the immaterial based on previor to the immaterial based on
10.1.1 10.1.2 10.1.3 10.1.4 10.1.5 10.2 10.2.1	Ustility locating and protection (SAND URBAN DESIGNAT Notes: Open earthworks batters area = 230 000m2 LANDSCARMO Topos I treatment Respread toposin from stocks le (250mm) Multihag Multihag Respread toposin from stocks le (250mm) Respread toposin from	m2 m2 m2 m2 m2 m2 m2 m2	230 000.00 25 000 0 25 000 0 25 000 0 977 0 0.00 2 0 000 00 3 337.80		t							125 000.00		Exclude as likely to be immaterial based on previon Exclude the second
10.1.1 10.1.2 10.1.3 10.1.4 10.1.5 10.2	Uptility locating and protection KO AND URAN DESIGN Notes: Open earthworks batters area = 230 000mz LANDSCAPING Topio I treatment Resperad topoid from stocks le (250mm) Mulching Weet control maintenance Revegetation planting Foopbath / Shared Path / Cycle Path Supply place and finish concrete footpath/ cycl pat linci list (100mm concrete) - along with magazina Robert	m2 m2 m2 m2 m2 m2	230 000.00 250 000.00 250 000.00 834 00 00 977 0 0.00 2 0 000 00		7							125 000.00		Exclude as likely to be immaterial based on previor Exclude as likely to be immaterial based on previor Exclude as likely to be immaterial based on previor Exclude as likely to be immaterial based on previor previor to the immaterial based on previor to the immaterial based on the immaterial based on previor to the immaterial based on
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