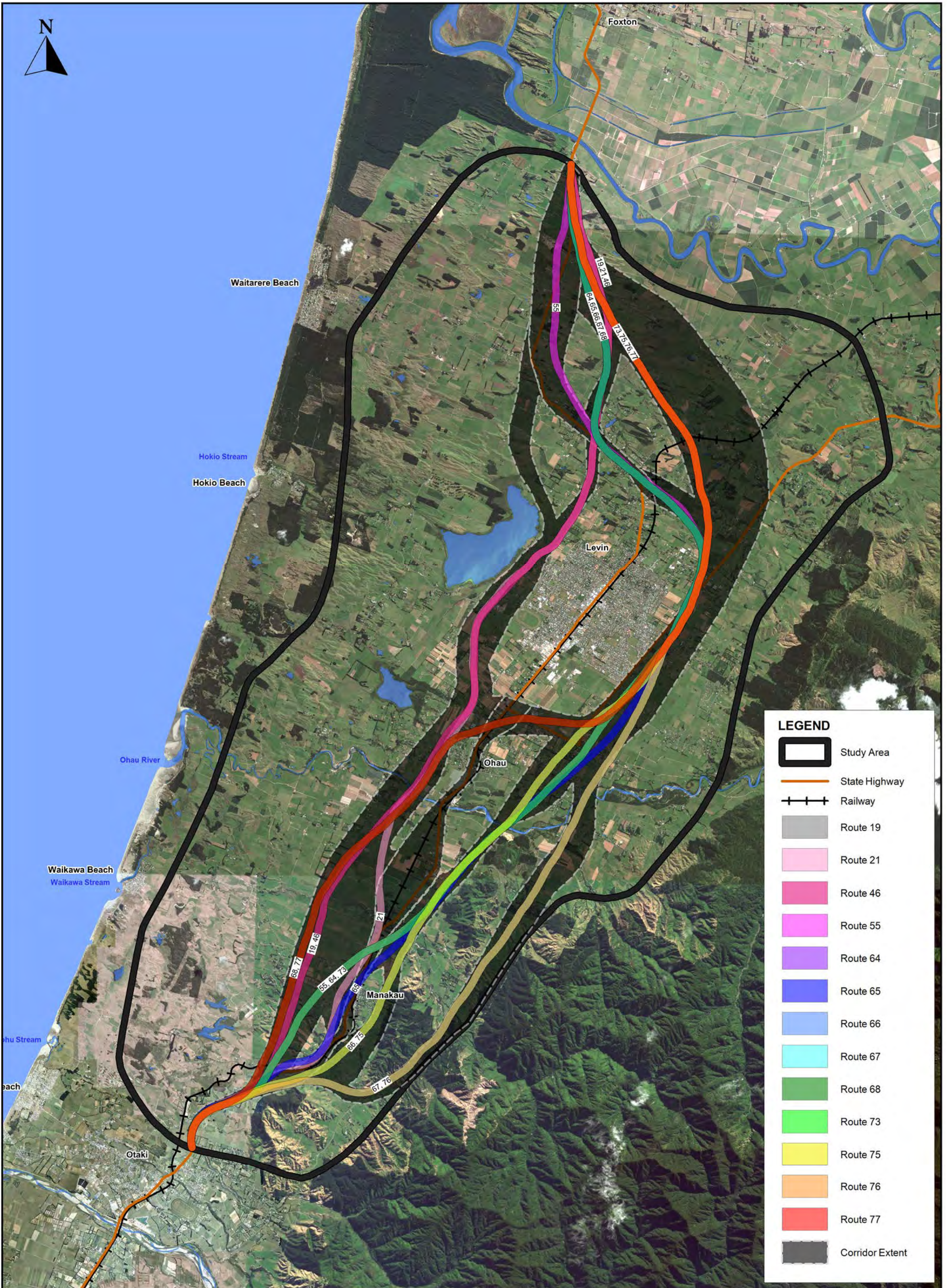
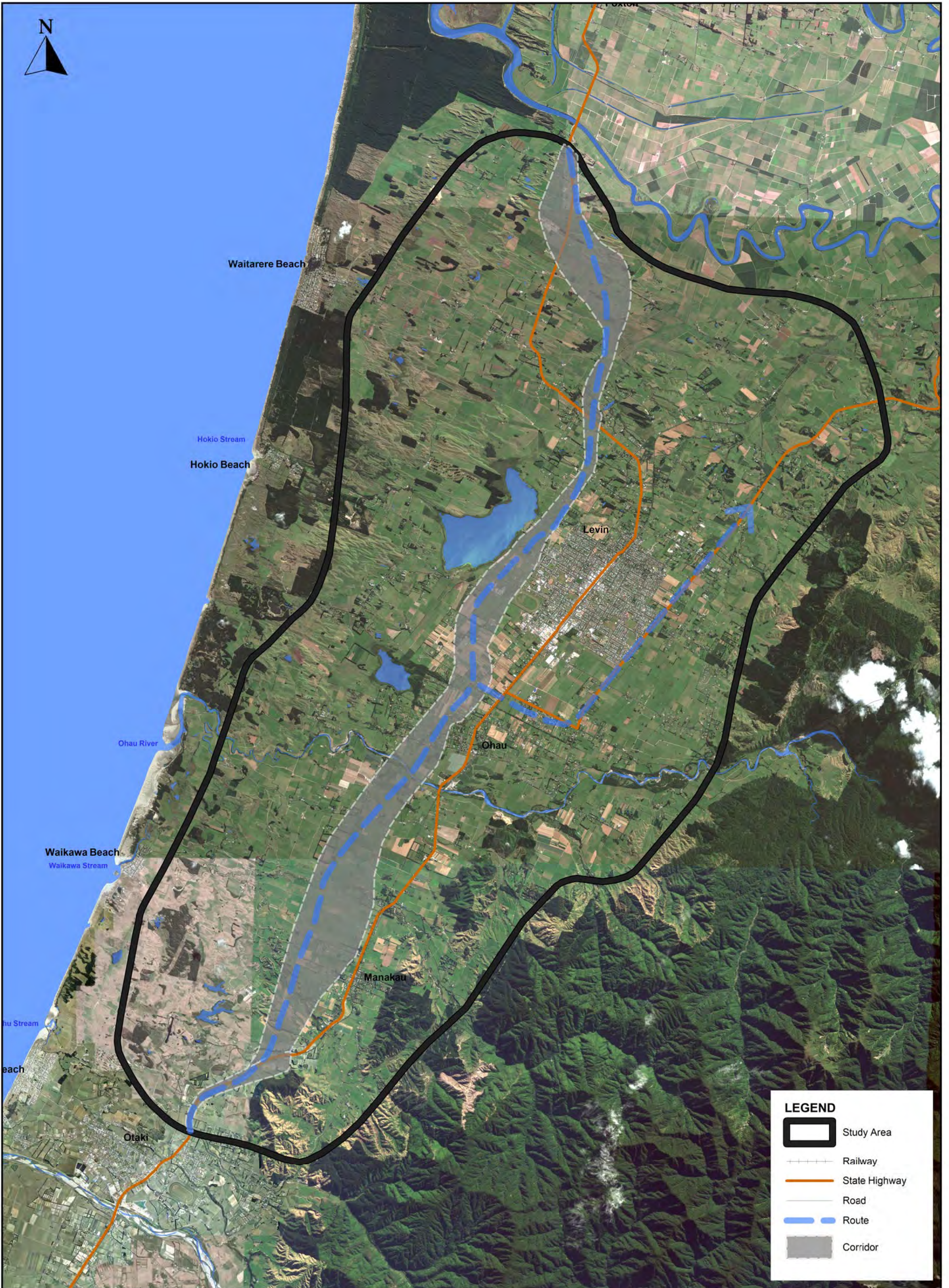


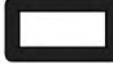
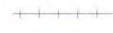


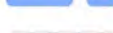

Appendix K Quantum Alignments

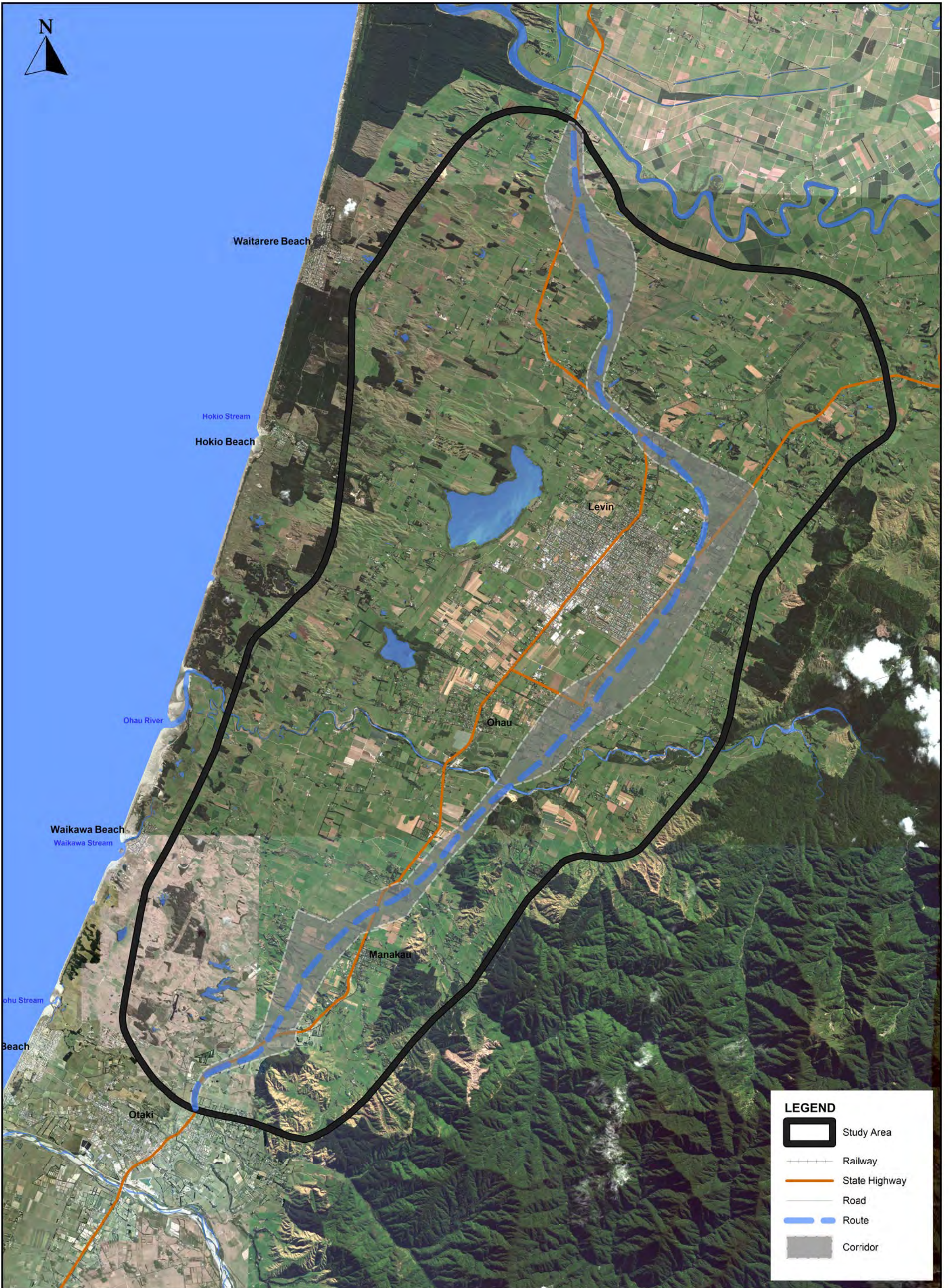


Appendix L Short Listed Options



LEGEND

-  Study Area
-  Railway
-  State Highway
-  Road
-  Route
-  Corridor



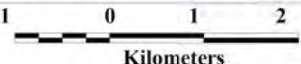
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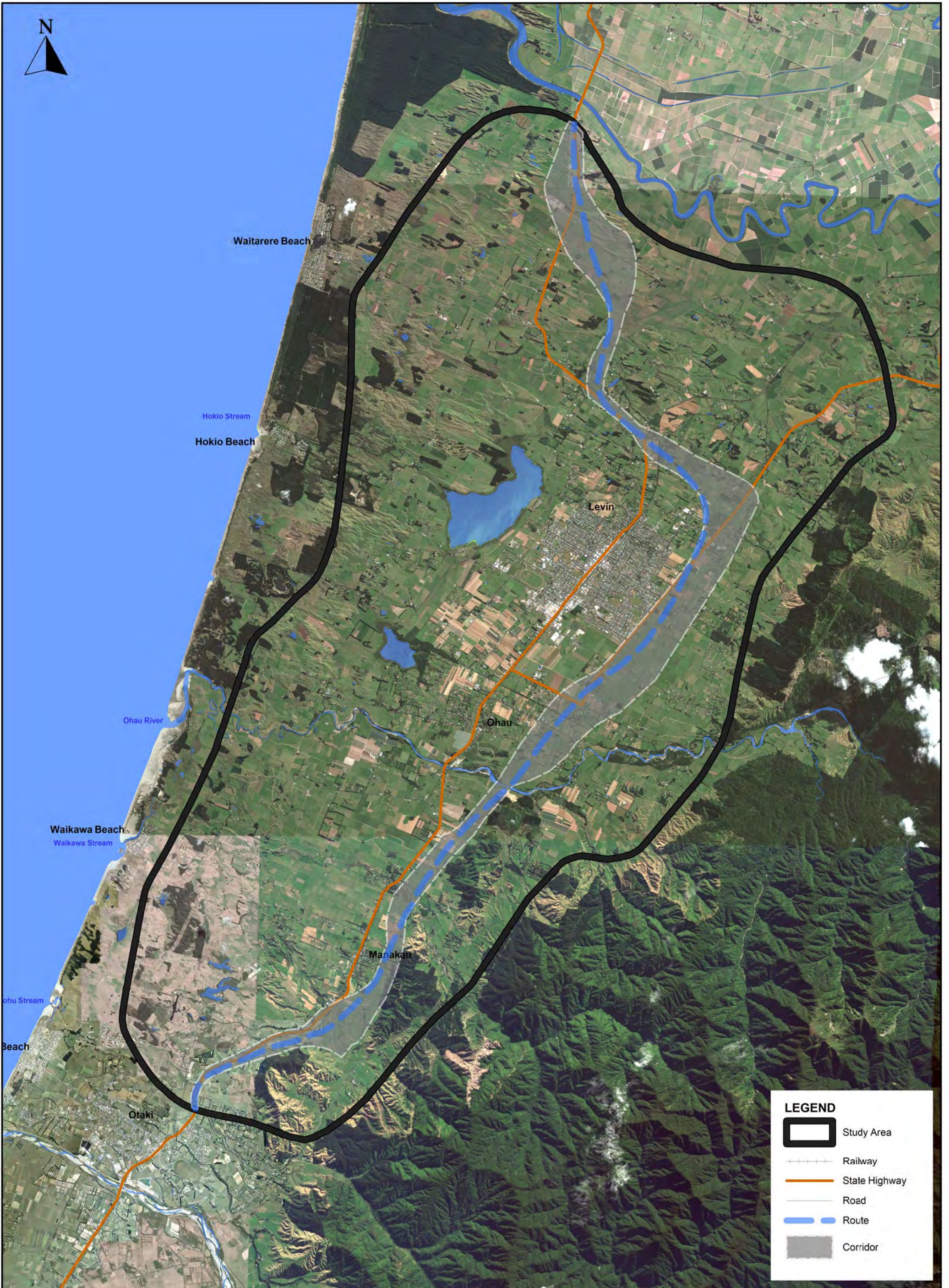
-  Study Area
-  Railway
-  State Highway
-  Road
-  Route
-  Corridor

 **MWH**
BSG GIS Wellington

 **NZTA**
NZ TRANSPORT AGENCY
WAKA KOTAHU

OTAKI-LEVIN CORRIDORS
Appendix L: Route 64
Sourced from: BSG Share Wellington

Map No. 9 Version: 2

 Kilometers
Scale: 1:90,000
 Original map size: A3 Date: 28 Sept 2014



LEGEND

- Study Area
- Railway
- State Highway
- Road
- Route
- Corridor

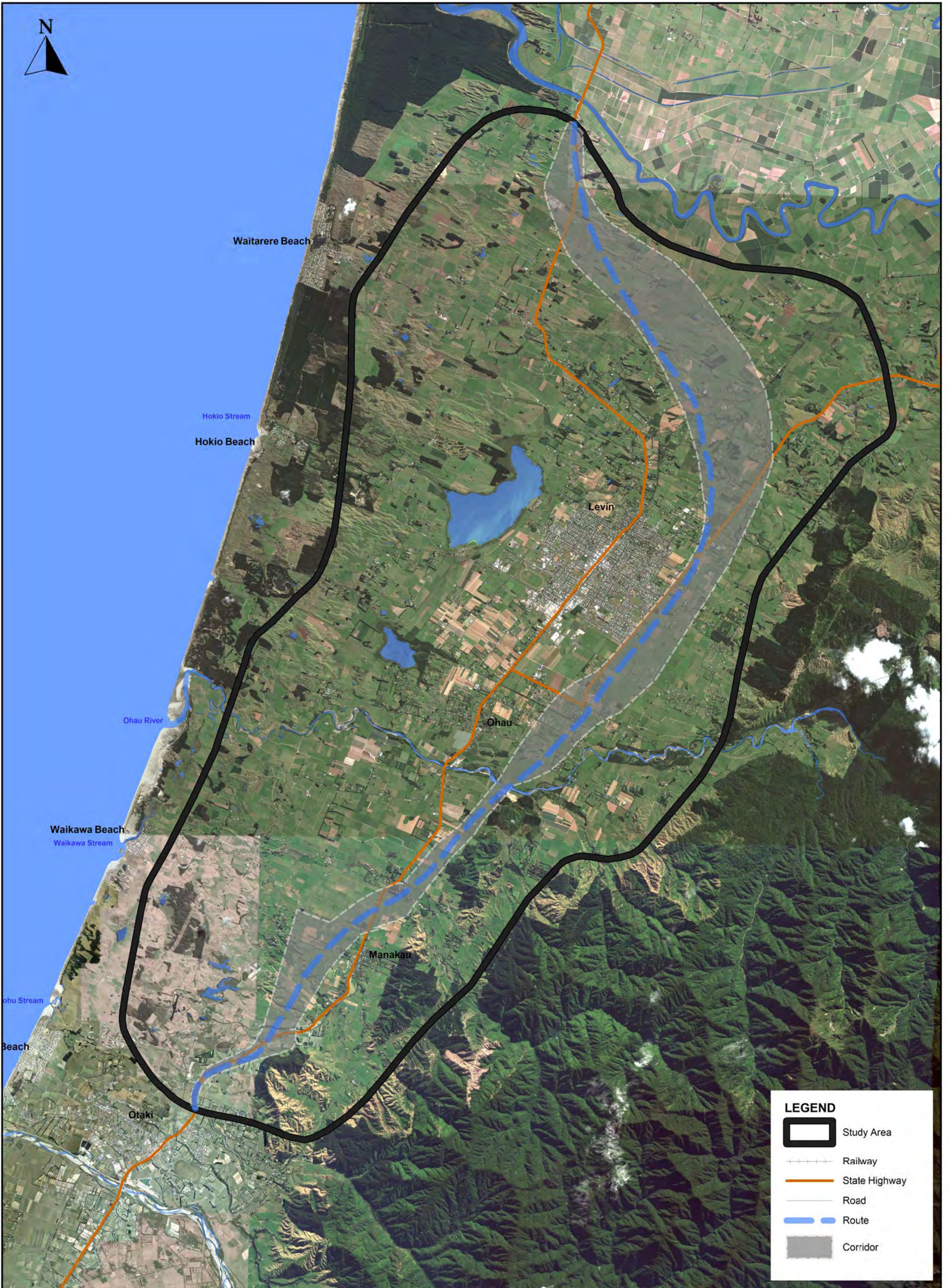
MWH
BSG GIS Wellington

NZ TRANSPORT AGENCY
WAKA KOTAHU
NZTA






OTAKI-LEVIN CORRIDORS
Appendix L: Route 66
Sourced from: BSG Share Wellington

Map No. 9 Version: 3

 Scale: 1:90,000
 Original map size: A3 Date: 28 Sept 2014



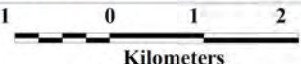
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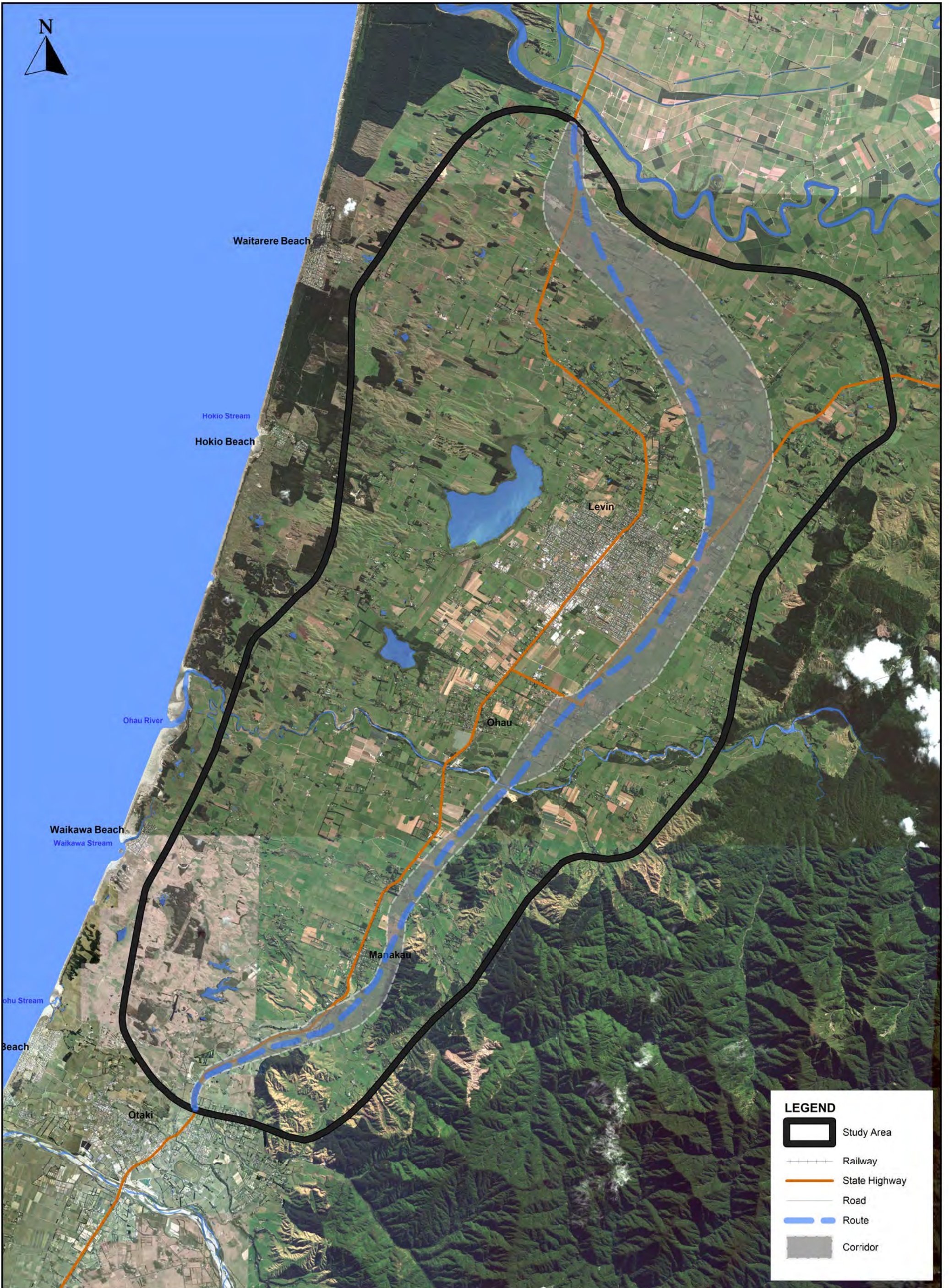
-  Study Area
-  Railway
-  State Highway
-  Road
-  Route
-  Corridor

 **MWH**
BSG GIS Wellington





 NZ TRANSPORT AGENCY
WAKA KOTAHU
NZTA

OTAKI-LEVIN CORRIDORS
Appendix L: Route 73
Sourced from: BSG Share Wellington

Map No. 9 Version: 4

 Kilometers
Scale: 1:90,000
 Original map size: A3 Date: 28 Sept 2014



LEGEND

-  Study Area
-  Railway
-  State Highway
-  Road
-  Route
-  Corridor




OTAKI-LEVIN CORRIDORS
Appendix L: Route 75

BSG GIS Wellington

NZTA

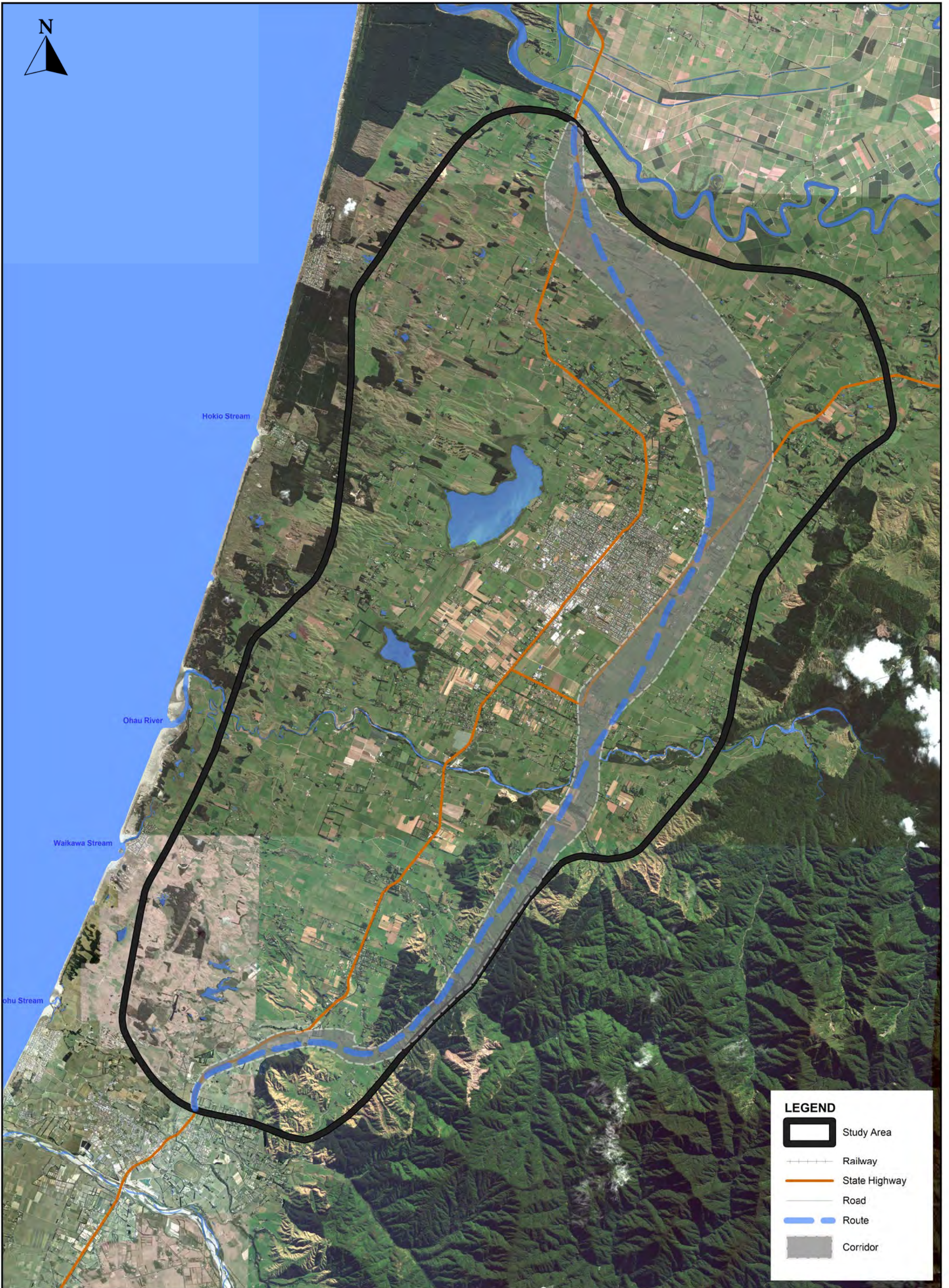
Sourced from: BSG Share Wellington

Map No. 9 Version: 5



Kilometers
Scale: 1:90,000

Original map size: A3 Date: 28 Sept 2014



LEGEND

-  Study Area
-  Railway
-  State Highway
-  Road
-  Route
-  Corridor



OTAKI-LEVIN CORRIDORS
Appendix L: Route 76

BSG GIS Wellington

NZTA

Sourced from: BSG Share Wellington

Map No. 9 Version: 6



Kilometers
Scale: 1:90,000

Original map size: A3 Date: 28 Sept 2014

Appendix M Geotechnical Information and Investigations

Existing Geotechnical Information

Introduction

MWH prepared a Preliminary Geotechnical Appraisal Report in April 2011 during the Area assessment stage. The report indicated that limited ground investigation data are available and so further investigations are required once the preferred route options are identified. The following summary of geotechnical conditions is based on the limited data available and walkover inspections from public rights of way.

Indicative Ground Conditions

The generalised geology of the materials underlying the project area is summarised in the following table:

Table M-1: Summary of Geological Units

STRATA	LITHOLOGY	OXYGEN ISOTOPE STAGE	SERIES	EPOCH	PERIOD
Alluvium	Undifferentiated alluvium in fluviatile flood plain, estuarine and beach deposits and peat This material is primarily identified around the central section of the study area. Coarse greywacke gravels are noted in the vicinity of streams Dune sand has been noted around the western periphery of the study area.	Q1a and Q1d	-	Holocene (Present interglacial)	Quaternary
River Terrace Deposits	Younger and Older Hawera Terraces comprising deposits of medium to highest terrace system. These materials consist of sandy gravels which are moderately weathered	Q2a and Q3a	Hawera	Pleistocene (last glaciation)	Quaternary
Raised Beach Deposits	Older Hawera Terraces comprising deposits of marine sand with minor gravel, generally well consolidated This material is identified on elevated terraces north of Levin, at Ohau and between Ōtaki and Manakau	Q5b	Hawera	Pleistocene (last interglacial)	Quaternary
Wellington Greywacke	Alternating, dark grey argillite and greywacke sandstone with rare limestone bands	-	Balfour	-	Triassic

It is considered unlikely that the underlying Wellington Greywacke will be exposed on any of the four corridors identified to date. All four options will cross areas where the other three materials are exposed. Of particular interest are areas and pockets of peat within the alluvium. Further investigations will concentrate on identifying such areas because they will have a significant influence on the stability of the expressway and the cost of its construction.

In general, geological conditions are more favourable for road construction to the east and south of the study area. To the west (but east of the sand dunes, which have not been considered), the alluvial sediments appear softer with a greater number and larger areas of peat than to the east. These conditions are reproduced to the north of the study area in the floodplain of the Manawatu River and, to a lesser extent, in the floodplains of the Ohau River and Waikawa Stream, both of which are crossed by all route options.

Seismicity

The only known major faults close to the study area run at the eastern margin of the lowlands at the foot of the Tararua Range (roughly the eastern boundary of the study area), within the Tararua Range and under the sea west of the western boundary of the study area. Other major faults are located close enough to the study area to have local effects when they rupture. Ruptures on these faults can be expected to induce liquefaction in the alluvium and may cause tsunamis and resultant inundation of large parts of the study area.

In general, susceptibility to liquefaction and inundation (tsunami) decreases to the east and south.

Materials for Road Construction

Further investigation is required to determine the suitability of the materials traversed by the route options for road construction. It is expected that the softer alluvium and peat will present some challenges, but that the raised river terraces and raised beach deposits will be straightforward to work with.

There is a quarry north east of Manakau which appears to be quarrying a greywacke outlier. Excellent river gravels are available from a quarry in Ōtaki, a few kilometres south of the study area.

Proposed Geotechnical Investigations

Proposed Site Investigation Activities

In view of the limited available ground investigation data noted during the preparation of the PGAR report, no clear cut distinction can be made regarding establishing a preferred route from the four options. In view of this, it is proposed that site investigation are carried out across the four routes layout in order to obtain more detailed data on the ground conditions beneath each option; and thereby enable an assessment and recommendation to be made on the most appropriate option from a geotechnical perspective.

The site investigation proposed will comprise of the following activities:

- Geotechnical site reconnaissance
- Ground investigation which will include intrusive investigation, supervision and testing
- Reporting including both factual and interpretative geotechnical reporting

The geotechnical site reconnaissance will include a thorough walkover examination of the site in conjunction with confirming geotechnical features identified in the desk study. The site reconnaissance will also include a walk over survey to observe features within and around the route options with checks on access, adjacent properties, surface topography, surface water, drainage, present site use, evidence of ground conditions from geomorphology, quarries, cuttings, exposures, type and conditions of vegetation as well as condition of existing structures. Detailed records will be completed on site including notes, sketches and plans.

The aims of the Geotechnical Investigation are as follows:

- To prepare an accurate geotechnical model for the site;
- To identify, describe and investigate all geotechnical hazards relevant to the facility;
- To assess subsurface conditions and to provide design parameters for the proposed expressway design and construction including all foundations, excavations, pavements, earth retaining structures and earthworks;
- To assess ground water conditions and the impact of ground water on the proposed construction, together with identification of suitable ground water control measures if necessary;
- To assess the excavatability of the site and suitability of excavated material for reuse as backfilling;
- To estimate short term and long term settlements from various foundation types and loadings;
- To assess suitability for road base material;
- To identify the suitability of excavated material for use as fill or road base material;
- To identify suitable borrow areas close to site and along the access roads for use as fill and road base;
- To sample materials for testing.

Scope of Work

This section describes the indicative minimum scope of field work, laboratory testing, analysis and reporting for the Geotechnical Investigation.

All equipment including drilling rigs, vehicles, workmanship and materials required for the investigation shall comply with the requirements of all relevant New Zealand Standards, regulations, codes and statutory requirements and with the relevant Local Authorities, Acts and Regulations including the latest Safety and Health Act and Regulations including NZTA policies and protocols for HSE Management, Quality Management and Cultural Heritage.

Fieldwork for the investigation shall include the following:

- Undertake a Geotechnical Investigation on the site;
- Checking and ensuring that proposed test locations are clear of buried services;

- Mobilisation and demobilisation of all plant, personnel and equipment necessary for execution of the work including the provision of access;
- Set out the locations of all the investigation works;
- Drill boreholes to determine the type and condition of the underlying material. The boreholes shall be deep enough to establish the depth to bedrock. Undertake SPT tests alternatively every 1.5m with sampling for testing at 1.5m intervals;
- Sample and logging of soil and rock encountered in the boreholes;
- Perform site and laboratory testing to determine geotechnical properties of the soil/rock;
- Install stand pipes to monitor groundwater level (Locations of monitoring wells to be decided on site by the supervising engineer);
- Investigate ground water for impurities that may affect surface foundations e.g. sulphates and PH values;
- Excavation, logging and photography of all excavator test pits including disturbed and undisturbed sampling;
- Backfilling or installation of standpipe and capping of boreholes after completion of sampling; and
- Undertake in-situ California Bearing Ratio tests at locations to be determine by the supervising engineer;
- Monitoring of groundwater levels within the standpipes 1 week after installation;
- Clean-up on completion.

The contractor will be advised of approximate foundation loads by the engineer prior to commencement of the investigation. The depth of investigation shall be sufficient to evaluate the material properties and the volume of ground which will significantly affect the performance of, or will be affected by the proposed new structures. The suggested depths of investigation are as follows:

Table N-2: Summary of Geological Units

Field Investigation For All Routes						
Intrusive Ground Investigation Method	Typical Depth (m)	Total Number Required	Standpipe Installation	Sampling	Angle of Inclination	Tested Required
Test Pits	3	100	N/A	B	90°	HSV/DCP
Cone Penetration Tests	20	10	N/A	D & U	90°	SPT
Borehole(Medium)	10	5	5	D & U	90°	SPT
Borehole (Deep)	15	5	5	D & U	90°	SPT
Pavement Pits with Scala Penetrometer Tests	1	20	N/A	D & U	90°	DCP/HSV
Hand Auger with Scala Penetrometer Tests	Up to 5	150	N/A	D & U	90°	DCP/HSV
In-situ CBR Tests	0.5	10	N/A	D & U	90°	CBR

Where:

B: Bulk samples

D: Disturbed samples

U: Undisturbed samples

HSV: Hand Shear Vane

SPT: Standard Penetration Test

DCP: Dynamic Cone Penetration Test

CBR: California Bearing Ratio

The depths and total number of individual boreholes (and Cone Penetration Tests) may vary to suit the actual foundation conditions encountered but shall not be less than the depths stated above. Any changes to the depth shall be in agreement with the supervising engineer

Geotechnical Laboratory Testing

The indicative laboratory testing program shall be nominated by the Contractor on the basis of the samples taken and following the engineers tests schedule commence with the program. The following minimum numbers of tests are envisaged:

Table N-3: Minimum Laboratory Tests Requirement

Tests	Quantity	Standard
Particle Size Distribution (wet/ dry sieve)	20	NZS 4402:1986 Part 1
Particle Size Distribution (hydrometer)	10	NZS 4402:1986 Part 1
Atterberg Limit	10	NZS 4402:1986 Part 1
Organic Matter	20	NZS 4402:1986 Part 1
Standard Compaction (4.5kg rammer) + air voids	15	NZS 4402:1986 Part 1
Natural moisture Content	50	NZS 4402:1986 Part 1
Lab California Bearing Ratio at NMC	15	NZS 4402:1986 Part 1
Laboratory Hand Shear Vane (Remoulded)	10	NZS 4402:1986 Part 1
Unconsolidated Undrained Triaxial (Undisturbed/Remoulded)	10	NZS 4402:1986 Part 1
Point Load Tests	20	ASTM D5731-95
Oedometer Tests	50	NZS 4402:1986 Part 1
Soil Chemical Tests	10	NZS 4402:1986 Part 1

Geotechnical Analysis and Reporting

Upon completion of the fieldwork, MWH will prepare the geotechnical reports to include plans and descriptions of the works carried out, detailed descriptions of the site geology and ground conditions encountered, and design recommendations on the following:

- Geotechnical cross sections of the site in orthogonal directions;
- Bearing pressure for shallow foundations at the recommended depths;
- Bored pier/pile types, bearing capacity, skin friction values for determining tension pullout values and negative skin friction;
- Lateral pile/bored pier capacity;
- Underground soil strata geology and classification subsurface materials and conditions;
- The level of groundwater table
- Total, differential and tolerable settlement of foundations
- Evaluate active and passive pressure coefficients in the soil/rock material;

- Determine the dynamic shear modulus G; Determine the soil/rock stiffness values generally i.e. subgrade modulus “k” values, Poisson’s Ratio and density of the soil/rock/material for highway structures
- UCS Values;
- Atterberg Limits and grading curves for existing fill and road materials;
- Safe batter slope for excavation; and
- One PH test from the top 2m of some of the boreholes.
- Earthwork preparation, compaction measures, requirements and the associated CBR values;
- Recommended earthwork construction methods for pavement works; and
- Excavatability of site earthwork for construction and the suitable use of excavated material for earthwork.

Proposed Site Investigation Cost

The likely site investigation and reporting costs of this preliminary geotechnical investigation to enable the most suitable route to be determined have been estimated. The breakdown is shown below.

Table N-4 – Proposed Site Investigation Cost Estimate Breakdown

Category	Element	Estimated Cost
Fees	Project Management and Preliminaries	\$21,500
	Ground Investigations	\$76,940
	Factual Report	\$18,760
	Interpretive Report	\$64,720
Disbursements	Internal Disbursements	\$17,000
	Preliminary and General	\$55,000
	CPT Drilling	\$12,000
	Rotary Borehole Coring	\$75,000
	Hand Augers	\$29,000
	Scala Penetrometer Tests	\$15,000
	Standpipe Piezometer Installation	\$13,000
	Test Pits	\$68,000
	Pavement Pit Excavations	\$5,000
	Traffic Management	\$25,000
	Insitu CBR Tests	\$3,000
	Ground Water Monitoring	\$3,000
	Sampling	\$2,000
	Lab Testing	\$59,000
	Total	

Table N-5 – Proposed Site Investigation Cost Estimate

Option	Site Investigation Cost	Contingency	Overall SI Cost
Combined Routes Investigation	\$ 563,000.00	\$ 50,000.00	\$613,000.00

Appendix N Cost Estimates

Project Estimate - Form A

FE

Project Name: Otaki to North of Levin Scoping Study Option 46

Feasibility Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	Nett Project Property Cost	49,532,000	29,300,000	47,900,000
B	Investigation and Reporting			
	- Consultancy Fees	2,940,000	1,510,000	2,470,000
	- NZTA Managed Costs	2,940,000	1,510,000	2,470,000
	Total Investigation and Reporting	5,880,000	3,020,000	4,940,000
C	Design and Project Documentation			
	- Consultancy Fees	4,010,000	550,000	0
	- NZTA Managed Costs	2,260,000	580,000	950,000
	Total Design and Project Documentation	6,270,000	1,130,000	950,000
D	Construction			
	MSQA			
	- Consultancy Fees	24,300,000	5,390,000	8,820,000
	- NZTA Managed Costs	2,600,000	580,000	940,000
	- Consent Monitoring Fees	2,600,000	580,000	940,000
	Sub Total Base MSQA	29,500,000	6,550,000	10,700,000
	Physical Works			
	1 Environmental Compliance	6,710,000	1,610,000	2,630,000
	2 Earthworks	27,030,000	17,140,000	28,030,000
	3 Ground Improvements	2,120,000	1,200,000	1,970,000
	4 Drainage	6,580,000	3,380,000	5,520,000
	5 Pavement and Surfacing	99,920,000	19,110,000	31,250,000
	6 Bridges	52,290,000	14,090,000	23,050,000
7 Retaining Walls	760,000	110,000	180,000	
8 Traffic Services	14,320,000	6,290,000	10,290,000	
9 Service Relocations	620,000	350,000	580,000	
10 Landscaping	7,730,000	2,100,000	3,430,000	
11 Traffic Management and Temporary Works	640,000	110,000	180,000	
12 Preliminary and General	34,570,000	5,180,000	8,480,000	
13 Extraordinary Construction Costs	12,230,000	9,460,000	15,470,000	
	Sub Total Base Physical Works	265,520,000	80,130,000	131,060,000
	Total Construction	295,020,000	86,680,000	141,760,000
E	Project Base Estimate (A+B+C+D)	357,000,000		
F	Contingency (Assessed/Analysed) (A+B+C+D)		125,000,000	
G	Project Expected Estimate (E+F)		482,000,000	
	Project Property Cost Expected Estimate		78,832,000	
	Investigation and Reporting Expected Estimate		8,900,000	
	Design and Project Documentation Expected Estimate		7,400,000	
	Construction Expected Estimate		381,700,000	
H	Funding Risk (Assessed/Analysed) (A+B+C+D)			196,000,000
I	95th percentile Project Estimate (G+H)			678,000,000
	Project Property Cost 95th percentile Estimate			126,732,000
	Investigation and Reporting 95th percentile Estimate			13,840,000
	Design and Project Documentation 95th percentile Estimate			8,350,000
	Construction 95th percentile Estimate			523,460,000

Date of Estimate: 5/10/11	Cost Index (Qtr/Year)
Estimate prepared by CBAL-Chris Bremner	Signed
Estimate internal peer review by RJMB	Signed
Estimate external peer review by	Signed
Estimate accepted by NZTA	Signed

Note: (1) These estimates are exclusive of escalation and GST.

Project Estimate - Form A

FE

Project Name: Otaki to North of Levin Scoping Study Option 64

Feasibility Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	Nett Project Property Cost	59,100,000	29,300,000	47,900,000
B	Investigation and Reporting			
	- Consultancy Fees	2,600,000	1,510,000	2,470,000
	- NZTA Managed Costs	2,600,000	1,510,000	2,470,000
	Total Investigation and Reporting	5,200,000	3,020,000	4,940,000
C	Design and Project Documentation			
	- Consultancy Fees	3,600,000	550,000	0
	- NZTA Managed Costs	2,000,000	580,000	950,000
	Total Design and Project Documentation	5,600,000	1,130,000	950,000
D	Construction			
	MSQA			
	- Consultancy Fees	20,700,000	5,390,000	8,820,000
	- NZTA Managed Costs	2,300,000	580,000	940,000
	- Consent Monitoring Fees	2,300,000	580,000	940,000
	Sub Total Base MSQA	25,300,000	6,550,000	10,700,000
	Physical Works			
	1 Environmental Compliance	5,110,000	1,610,000	2,630,000
	2 Earthworks	25,170,000	17,140,000	28,030,000
	3 Ground Improvements	1,880,000	1,200,000	1,970,000
	4 Drainage	6,800,000	3,380,000	5,520,000
	5 Pavement and Surfacing	98,600,000	19,110,000	31,250,000
	6 Bridges	38,830,000	14,090,000	23,050,000
7 Retaining Walls	40,000	110,000	180,000	
8 Traffic Services	12,630,000	6,290,000	10,290,000	
9 Service Relocations	550,000	350,000	580,000	
10 Landscaping	8,580,000	2,100,000	3,430,000	
11 Traffic Management and Temporary Works	570,000	110,000	180,000	
12 Preliminary and General	31,350,000	5,180,000	8,480,000	
13 Extraordinary Construction Costs	11,740,000	9,460,000	15,470,000	
	Sub Total Base Physical Works	241,850,000	80,130,000	131,060,000
	Total Construction	267,150,000	86,680,000	141,760,000
E	Project Base Estimate (A+B+C+D)	337,000,000		
F	Contingency (Assessed/Analysed) (A+B+C+D)		120,000,000	
G	Project Expected Estimate (E+F)		457,000,000	
	Project Property Cost Expected Estimate		88,400,000	
	Investigation and Reporting Expected Estimate		8,220,000	
	Design and Project Documentation Expected Estimate		6,730,000	
	Construction Expected Estimate		353,830,000	
H	Funding Risk (Assessed/Analysed) (A+B+C+D)			196,000,000
I	95th percentile Project Estimate (G+H)			653,000,000
	Project Property Cost 95th percentile Estimate			136,300,000
	Investigation and Reporting 95th percentile Estimate			13,160,000
	Design and Project Documentation 95th percentile Estimate			7,680,000
	Construction 95th percentile Estimate			495,590,000

Date of Estimate: 5/10/11	Cost Index (Qtr/Year)
Estimate prepared by CBAL-Chris Bremner	Signed
Estimate internal peer review by RJMB	Signed
Estimate external peer review by	Signed
Estimate accepted by NZTA	Signed

Note: (1) These estimates are exclusive of escalation and GST.

Project Estimate - Form A

FE

Project Name: Otaki to North of Levin Scoping Study Option 66

Feasibility Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	Nett Project Property Cost	59,100,000	29,300,000	47,900,000
B	Investigation and Reporting			
	- Consultancy Fees	2,600,000	1,510,000	2,470,000
	- NZTA Managed Costs	2,600,000	1,510,000	2,470,000
B	Total Investigation and Reporting	5,200,000	3,020,000	4,940,000
C	Design and Project Documentation			
	- Consultancy Fees	3,600,000	550,000	0
	- NZTA Managed Costs	2,000,000	580,000	950,000
C	Total Design and Project Documentation	5,600,000	1,130,000	950,000
D	Construction			
	MSQA			
	- Consultancy Fees	21,500,000	5,390,000	8,820,000
	- NZTA Managed Costs	2,300,000	580,000	940,000
	- Consent Monitoring Fees	2,300,000	580,000	940,000
	Sub Total Base MSQA	26,100,000	6,550,000	10,700,000
	Physical Works			
	1 Environmental Compliance	5,140,000	1,610,000	2,630,000
	2 Earthworks	26,660,000	17,140,000	28,030,000
	3 Ground Improvements	1,880,000	1,200,000	1,970,000
	4 Drainage	6,830,000	3,380,000	5,520,000
	5 Pavement and Surfacing	100,180,000	19,110,000	31,250,000
	6 Bridges	29,760,000	14,090,000	23,050,000
7 Retaining Walls	40,000	110,000	180,000	
8 Traffic Services	12,630,000	6,290,000	10,290,000	
9 Service Relocations	550,000	350,000	580,000	
10 Landscaping	7,810,000	2,100,000	3,430,000	
11 Traffic Management and Temporary Works	570,000	110,000	180,000	
12 Preliminary and General	31,350,000	5,180,000	8,480,000	
13 Extraordinary Construction Costs	13,410,000	9,460,000	15,470,000	
Sub Total Base Physical Works	236,810,000	80,130,000	131,060,000	
D	Total Construction	262,900,000	86,680,000	141,760,000
E	Project Base Estimate (A+B+C+D)	333,000,000		
F	Contingency (Assessed/Analysed) (A+B+C+D)		120,000,000	
G	Project Expected Estimate (E+F)		453,000,000	
	Project Property Cost Expected Estimate		88,400,000	
	Investigation and Reporting Expected Estimate		8,220,000	
	Design and Project Documentation Expected Estimate		6,730,000	
	Construction Expected Estimate		349,580,000	
H	Funding Risk (Assessed/Analysed) (A+B+C+D)			196,000,000
I	95th percentile Project Estimate (G+H)			649,000,000
	Project Property Cost 95th percentile Estimate			136,300,000
	Investigation and Reporting 95th percentile Estimate			13,160,000
	Design and Project Documentation 95th percentile Estimate			7,680,000
	Construction 95th percentile Estimate			491,340,000

Date of Estimate: 5/10/11	Cost Index (Qtr/Year)
Estimate prepared by CBAL-Chris Bremner	Signed
Estimate internal peer review by RJMB	Signed
Estimate external peer review by	Signed
Estimate accepted by NZTA	Signed

Note: (1) These estimates are exclusive of escalation and GST.

Project Estimate - Form A

FE

Project Name: Otaki to North of Levin Scoping Study Option 73

Feasibility Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	Nett Project Property Cost	52,260,000	29,300,000	47,900,000
	Investigation and Reporting			
	- Consultancy Fees	2,600,000	1,510,000	2,470,000
	- NZTA Managed Costs	2,600,000	1,510,000	2,470,000
B	Total Investigation and Reporting	5,200,000	3,020,000	4,940,000
	Design and Project Documentation			
	- Consultancy Fees	3,550,000	550,000	0
	- NZTA Managed Costs	2,000,000	580,000	950,000
C	Total Design and Project Documentation	5,550,000	1,130,000	950,000
	Construction			
	MSQA			
	- Consultancy Fees	21,400,000	5,390,000	8,820,000
	- NZTA Managed Costs	2,300,000	580,000	940,000
	- Consent Monitoring Fees	2,300,000	580,000	940,000
	Sub Total Base MSQA	26,000,000	6,550,000	10,700,000
	Physical Works			
1	Environmental Compliance	5,100,000	1,610,000	2,630,000
2	Earthworks	26,790,000	17,140,000	28,030,000
3	Ground Improvements	1,960,000	1,200,000	1,970,000
4	Drainage	6,520,000	3,380,000	5,520,000
5	Pavement and Surfacing	104,980,000	19,110,000	31,250,000
6	Bridges	39,530,000	14,090,000	23,050,000
7	Retaining Walls	40,000	110,000	180,000
8	Traffic Services	12,600,000	6,290,000	10,290,000
9	Service Relocations	550,000	350,000	580,000
10	Landscaping	7,750,000	2,100,000	3,430,000
11	Traffic Management and Temporary Works	570,000	110,000	180,000
12	Preliminary and General	31,930,000	5,180,000	8,480,000
13	Extraordinary Construction Costs	9,610,000	9,460,000	15,470,000
	Sub Total Base Physical Works	247,930,000	80,130,000	131,060,000
D	Total Construction	273,930,000	86,680,000	141,760,000
E	Project Base Estimate (A+B+C+D)	337,000,000		
F	Contingency (Assessed/Analysed) (A+B+C+D)		120,000,000	
G	Project Expected Estimate (E+F)		457,000,000	
	Project Property Cost Expected Estimate		81,560,000	
	Investigation and Reporting Expected Estimate		8,220,000	
	Design and Project Documentation Expected Estimate		6,680,000	
	Construction Expected Estimate		360,610,000	
H	Funding Risk (Assessed/Analysed) (A+B+C+D)			196,000,000
I	95th percentile Project Estimate (G+H)			653,000,000
	Project Property Cost 95th percentile Estimate			129,460,000
	Investigation and Reporting 95th percentile Estimate			13,160,000
	Design and Project Documentation 95th percentile Estimate			7,630,000
	Construction 95th percentile Estimate			502,370,000

Date of Estimate: 5/10/11	Cost Index (Qtr/Year)
Estimate prepared by CBAL-Chris Bremner	Signed
Estimate internal peer review by RJMB	Signed
Estimate external peer review by	Signed
Estimate accepted by NZTA	Signed

Note: (1) These estimates are exclusive of escalation and GST.

Project Estimate - Form A

FE

Project Name: Otaki to North of Levin Scoping Study Option 75

Feasibility Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	Nett Project Property Cost	50,320,000	29,300,000	47,900,000
B	Investigation and Reporting			
	- Consultancy Fees	2,600,000	1,510,000	2,470,000
	- NZTA Managed Costs	2,600,000	1,510,000	2,470,000
	Total Investigation and Reporting	5,200,000	3,020,000	4,940,000
C	Design and Project Documentation			
	- Consultancy Fees	3,550,000	550,000	0
	- NZTA Managed Costs	2,000,000	580,000	950,000
	Total Design and Project Documentation	5,550,000	1,130,000	950,000
D	Construction			
	MSQA			
	- Consultancy Fees	21,500,000	5,390,000	8,820,000
	- NZTA Managed Costs	2,300,000	580,000	940,000
	- Consent Monitoring Fees	2,300,000	580,000	940,000
	Sub Total Base MSQA	26,100,000	6,550,000	10,700,000
	Physical Works			
	1 Environmental Compliance	5,140,000	1,610,000	2,630,000
	2 Earthworks	27,680,000	17,140,000	28,030,000
	3 Ground Improvements	1,880,000	1,200,000	1,970,000
	4 Drainage	6,530,000	3,380,000	5,520,000
	5 Pavement and Surfacing	100,660,000	19,110,000	31,250,000
	6 Bridges	29,620,000	14,090,000	23,050,000
	7 Retaining Walls	50,000	110,000	180,000
8 Traffic Services	12,670,000	6,290,000	10,290,000	
9 Service Relocations		350,000	580,000	
10 Landscaping	7,720,000	2,100,000	3,430,000	
11 Traffic Management and Temporary Works	570,000	110,000	180,000	
12 Preliminary and General	27,310,000	5,180,000	8,480,000	
13 Extraordinary Construction Costs	10,300,000	9,460,000	15,470,000	
	Sub Total Base Physical Works	230,130,000	80,130,000	131,060,000
	Total Construction	256,230,000	86,680,000	141,760,000
E	Project Base Estimate (A+B+C+D)	317,000,000		
F	Contingency (Assessed/Analysed) (A+B+C+D)		120,000,000	
G	Project Expected Estimate (E+F)		437,000,000	
	Project Property Cost Expected Estimate		79,620,000	
	Investigation and Reporting Expected Estimate		8,220,000	
	Design and Project Documentation Expected Estimate		6,680,000	
	Construction Expected Estimate		342,910,000	
H	Funding Risk (Assessed/Analysed) (A+B+C+D)			196,000,000
I	95th percentile Project Estimate (G+H)			633,000,000
	Project Property Cost 95th percentile Estimate			127,520,000
	Investigation and Reporting 95th percentile Estimate			13,160,000
	Design and Project Documentation 95th percentile Estimate			7,630,000
	Construction 95th percentile Estimate			484,670,000

Date of Estimate: 5/10/11	Cost Index (Qtr/Year)
Estimate prepared by CBAL-Chris Bremner	Signed
Estimate internal peer review by RJMB	Signed
Estimate external peer review by	Signed
Estimate accepted by NZTA	Signed

Note: (1) These estimates are exclusive of escalation and GST.

Project Estimate - Form A

FE

Project Name: Otaki to North of Levin Scoping Study Option 76

Feasibility Estimate

Item	Description	Base Estimate	Contingency	Funding Risk
A	Nett Project Property Cost	50,320,000	29,300,000	47,900,000
	Investigation and Reporting			
	- Consultancy Fees	2,600,000	1,510,000	2,470,000
	- NZTA Managed Costs	2,600,000	1,510,000	2,470,000
B	Total Investigation and Reporting	5,200,000	3,020,000	4,940,000
	Design and Project Documentation			
	- Consultancy Fees	3,550,000	550,000	0
	- NZTA Managed Costs	2,000,000	580,000	950,000
C	Total Design and Project Documentation	5,550,000	1,130,000	950,000
	Construction			
	MSQA			
	- Consultancy Fees	21,500,000	5,390,000	8,820,000
	- NZTA Managed Costs	2,300,000	580,000	940,000
	- Consent Monitoring Fees	2,300,000	580,000	940,000
	Sub Total Base MSQA	26,100,000	6,550,000	10,700,000
	Physical Works			
1	Environmental Compliance	5,160,000	1,610,000	2,630,000
2	Earthworks	30,930,000	17,140,000	28,030,000
3	Ground Improvements	1,880,000	1,200,000	1,970,000
4	Drainage	7,170,000	3,380,000	5,520,000
5	Pavement and Surfacing	107,200,000	19,110,000	31,250,000
6	Bridges	32,500,000	14,090,000	23,050,000
7	Retaining Walls	11,710,000	4,680,000	8,200,000
8	Traffic Services	12,860,000	6,290,000	10,290,000
9	Service Relocations	550,000	350,000	580,000
10	Landscaping	7,950,000	2,100,000	3,430,000
11	Traffic Management and Temporary Works	570,000	110,000	180,000
12	Preliminary and General	30,390,000	5,180,000	8,480,000
13	Extraordinary Construction Costs	10,470,000	9,460,000	15,470,000
	Sub Total Base Physical Works	259,340,000	84,700,000	139,080,000
D	Total Construction	285,440,000	91,250,000	149,780,000
E	Project Base Estimate (A+B+C+D)	347,000,000		
F	Contingency (Assessed/Analysed) (A+B+C+D)		125,000,000	
G	Project Expected Estimate (E+F)		472,000,000	
	Project Property Cost Expected Estimate		79,620,000	
	Investigation and Reporting Expected Estimate		8,220,000	
	Design and Project Documentation Expected Estimate		6,680,000	
	Construction Expected Estimate		376,690,000	
H	Funding Risk (Assessed/Analysed) (A+B+C+D)			214,000,000
I	95th percentile Project Estimate (G+H)			686,000,000
	Project Property Cost 95th percentile Estimate			127,520,000
	Investigation and Reporting 95th percentile Estimate			13,160,000
	Design and Project Documentation 95th percentile Estimate			7,630,000
	Construction 95th percentile Estimate			526,470,000

Date of Estimate: 5/10/11	Cost Index (Qtr/Year)
Estimate prepared by CBAL-Chris Bremner	Signed
Estimate internal peer review by RJMB	Signed
Estimate external peer review by	Signed
Estimate accepted by NZTA	Signed

Note: (1) These estimates are exclusive of escalation and GST.