

Auckland Engineering

Life Lines



AUCKLAND ENGINEERING LIFELINES PROJECT

STAGE ONE REPORT
JULY 1997

PART 1: HAZARD INFORMATION
PART 2: NETWORK UTILITY INFORMATION



AUCKLAND REGIONAL COUNCIL
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Auckland
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PART 1: HAZARD INFORMATION PART 2: NETWORK UTILITY INFORMATION

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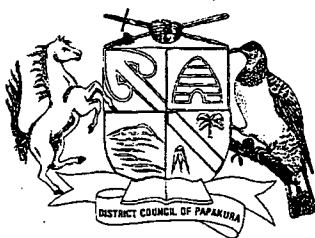
The purpose of the Auckland Engineering Lifelines Project and its published documents is to assess the general risk to lifeline services from hazard events and to identify areas where further investigations or risk mitigation of lifeline services are required.

While the information has been produced using the best advice available, it is not intended for any other application than the purposes of this Project.

No liability will be accepted by any of the participating in the Auckland Engineering Lifelines Project for any wider interpretation of or reliance of information in its published documents or on any other findings of the Auckland Engineering Lifelines Project.

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PART 2

NETWORK UTILITY INFORMATION

10.0 INTRODUCTION

In order that the Lifeline network vulnerability and interdependencies can be analysed, it is necessary to firstly determine what are the important network facilities. The location and extent of these Lifelines have been prepared by the individual organisations and coordinated through the task groups. Thus, a "snapshot" of the Lifelines network for the Auckland Region has been produced.

A continuing dilemma in collecting this information was the determination of the level, extent or threshold at which a network component becomes a Lifeline (of the region) rather than just important links (to a street, factory, suburb etc). Due to the complexity of the network, it is not possible to accurately define what this threshold is. Given unlimited resources, it should be possible to determine these link through analytical means, but the timescale and costs required would be prohibitive.

The decision on what was critical to the network was therefore left to the individual organisation on the basis that have the best knowledge of their operations and facilities. It is likely that during the next stages of the AELP that parts of the network will be removed from the maps on the basis that they are not regionally significant, and more importantly that additional parts of the network will be added. Additions will be both new Lifeline components (as they become commissioned) and parts that have not been identified for inclusion at this stage.

The critical elements of the individual networks are combined and "critical areas" identified; those areas of high service concentration and/or high vulnerability. The maps have been produced at a scale for ease of identification of these critical areas. The level of detail for the maps will be increased locally as critical areas are identified for more detailed analysis in the next stage of the project.

The level of detail on the maps and information in this report are therefore appropriate for their intended purpose. A snapshot can only be accurate for an instant in time. It is expected that this information will therefore be subject to continuous change and revision.

11.0 CIVIL

11.1 LEVEL OF INFORMATION

Individual members of this group have supplied information regarding their critical piped assets and the critical facilities in their individual areas. This information has been plotted. This is the first plot of critical pipes and facilities and it should be stressed that their are likely to be additions and deletions and deletions as the project progresses and certain pipes and buildings become critical for various reasons.

Most of the area is supplied by Watercare Services Limited and all of their assets are considered critical and have been included on the plan. This includes all dams and reservoirs. The various Councils have determined what services are critical in their areas and these have also been included. It should be noted that Waitakere City's pipes have not been included at this time as it is considered that the Watercare network is the critical piped asset. Similarly Auckland City's sewers have not been included as they are subject to a report which is to be completed within the next few weeks. Once completed this information will be added.

It should be noted that Rodney District and North Shore City are supplied with water by Watercare Services Limited but they provide their own Wastewater services as shown on the plans.

The critical facilities as supplied by the various civil defence organisations are also shown. These also may change as the project progresses.

11.2 INDEX OF NODES

The node index for maps 1A and 1B, the Water Supply network, is as follows;

Number	Name
1	Waikuhai Water Reservoir
2	Big King Water Reservoir
3	St Heliers Water Reservoir
4	Mt Victoria Water Reservoir
5	Verrans Corner Water Reservoir
6	Sunset Rd Water Reservoir
7	Forrest Hill Rd Water Reservoir
8	Browns Bay Rd Water Reservoir
9	The Avenue Water Reservoir
10	Glenvar Rd Water Reservoir
11	NSC/34 Water Reservoir
12	NSC/33 Water Pumping Station
13	NSC/32 Water Pumping Station
14	Water Reservoir
15	Water Reservoir
16	Water Reservoir
17	Water Pumping Station
18	Water Pumping Station
19	Water Reservoir
20	Water Reservoir

Number	Name
22	Water Reservoir
23	Water Pumping Station
24	Water Reservoir
25	Water Pumping Station
26	Water Reservoir
27	Water Reservoir
28	Water Reservoir
29	Water Pumping Station
30	Water Reservoir
31	Water Pumping Station
32	Crown Hill Water Reservoir
33	Kowhai Rd Water Reservoir
101	Watercare Pump Station
102	Watercare Pump Station
103	Watercare Pump Station
104	Watercare Pump Station
105	Watercare Pump Station
106	Titirangi Reservoir
107	Mt Roskill Reservoir
108	Watercare Pump Station
109	Redoubt Rd Reservoir
110	McLaughlins Reservoir
111	Onehunga Reservoir
112	Watercare Pump Station
113	Watercare Pump Station
114	Mill Rd Reservoir
115	Redoubt Rd North Reservoir
116	Watercare Pump Station
117	East Tamaki Reservoir
118	Ardmore Water Reservoir
119	Papakura Filter Station
120	Papakura Reservoir
121	Kaipara Rd Reservoir
122	Ardmore Filter Station
123	Watercare Pump Station
124	Watercare Pump Station
125	Redoubt Rd High Reservoir
126	Pinehill Reservoir
127	Birkenhead Reservoir
128	Waikumete Reservoir
129	Waitakere Filter Station
130	Waitakere Reservoir
131	Watercare Pump Station
132	Watercare Pump Station
133	Mt Albert Reservoir
134	Watercare Pump Station
135	Watercare Pump Station
136	Northcote Reservoir
137	Cuthill Reservoir
138	Sunset West Reservoir
139	Watercare Pump Station
140	Watercare Pump Station

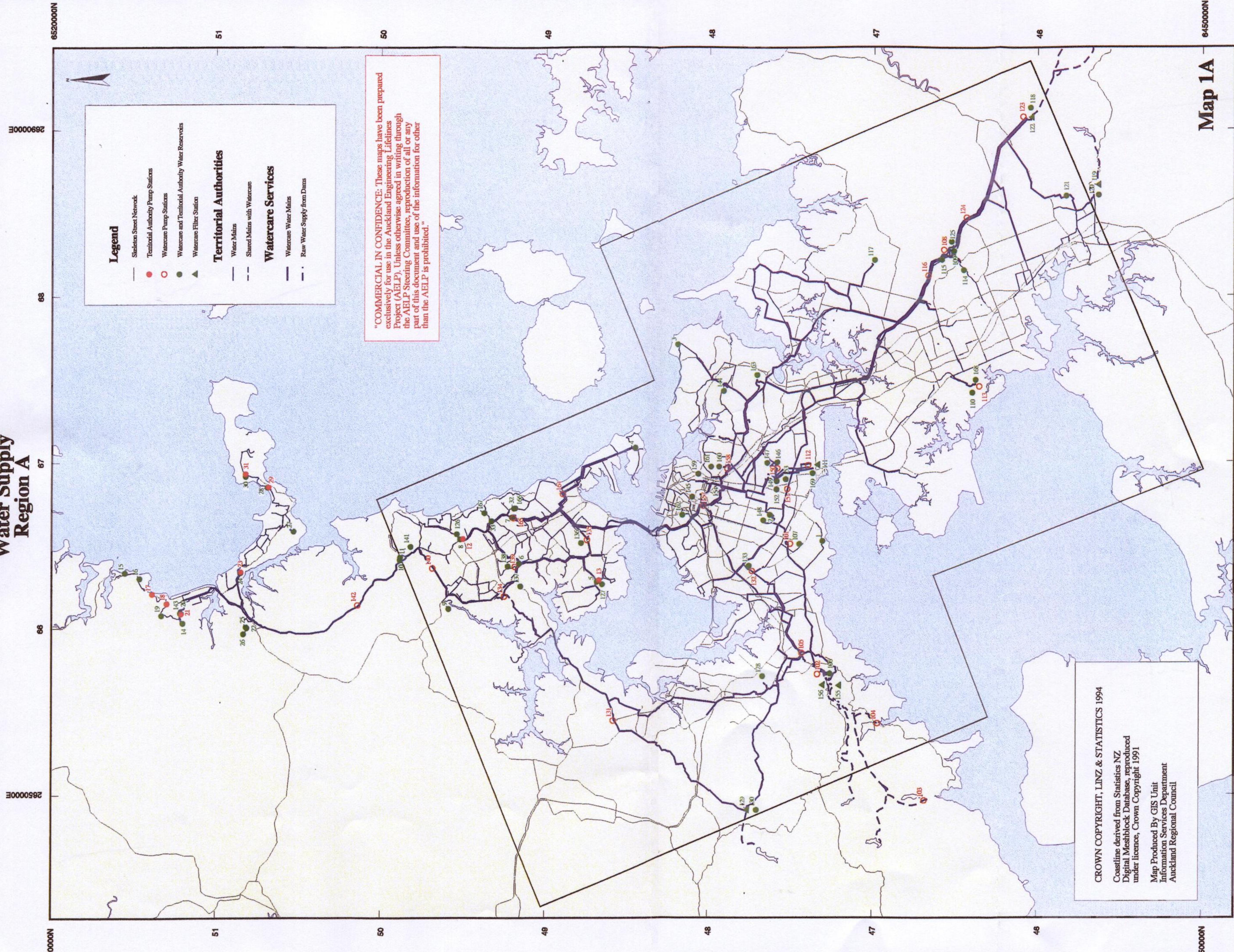
Number	Name
142	Watercare Pump Station
143	Maire Rd Orewa Reservoir
144	St Johns Reservoir
145	Khyber Pass Reservoir
146	Campbell Rd Reservoir
147	Cornwall Park Reservoir
148	Three Kings Reservoir
149	Onehunga High Reservoir
150	Watercare Pump Station
151	Watercare Pump Station
152	One Tree Hill Reservoir
153	Onehunga Low Reservoir
155	Huia Filter Station
156	Nihotupu Filter Station
157	Watercare Pump Station
158	Watercare Pump Station
159	Domain Reservoir
160	Mt Hobson Low Reservoir
161	Mt Hobson High Reservoir
162	Ponsonby Reservoir
163	Mt Wellington High Reservoir
164	Watercare Pump Station
165	Watercare Pump Station
166	Forrest Hill Reservoir
167	Kowhai Reservoir
168	Papatoetoe Bores
169	Onehunga Bores

The node index for maps 1C and 1D, the Wastewater network, is as follows;

Number	Name
1	Hillsborough Rd Pump Station
2	Hillsborough Rd Pump Station
3	Three Kings Pump Station
4	NSCC Trunk Pumping Station
5	NSCC Trunk Pumping Station
6	NSCC Trunk Pumping Station
7	NSCC Trunk Pumping Station
8	NSCC Trunk Pumping Station
9	NSCC Trunk Pumping Station
10	Sewer Pumping Station
11	Sewer Pumping Station
12	Treatment Plant
13	Sewer Pumping Station
14	Sewer Pumping Station
15	Sewer Pumping Station
16	Sewer Pumping Station
17	Sewer Pumping Station
18	Treatment Station
19	Sewer Pumping Station
20	Sewer Pumping Station
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37	Sewer Pumping Station
38	Sewer Pumping Station
39	Sewer Pumping Station
40	Sewer Pumping Station
41	Sewer Pumping Station
42	Sewer Pumping Station
43	Sewer Pumping Station
44	Sewer Pumping Station
45	Sewer Pumping Station
46	Sewer Pumping Station
47	Treatment Plan
48	Sewer Pumping Station
49	Sewer Pumping Station
50	NSCC Trunk Pumping Station
51	NSCC Trunk Pumping Station

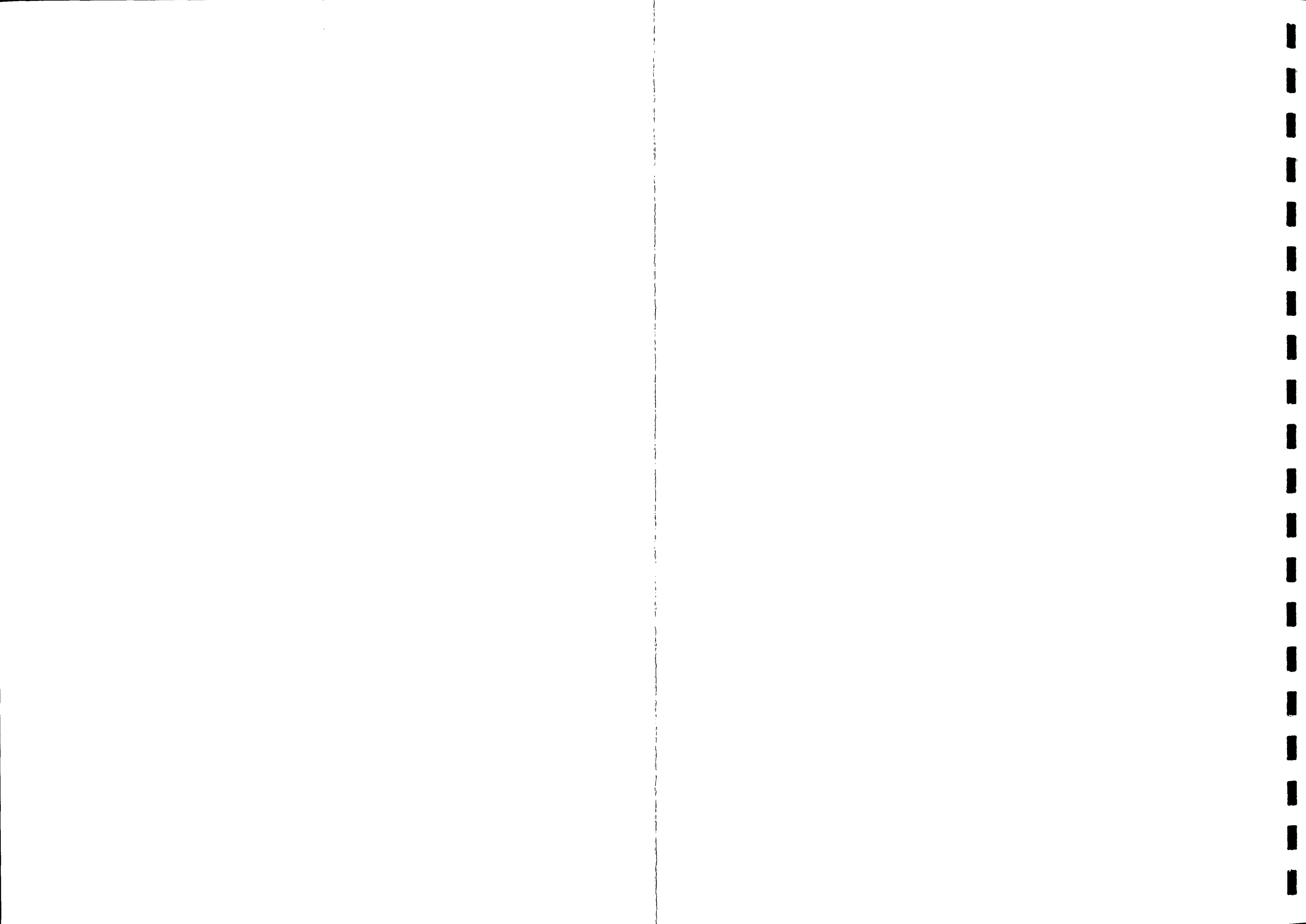
Number	Name
52	NSCC Trunk Pumping Station
53	NSCC Trunk Pumping Station
54	NSCC Trunk Pumping Station
55	NSCC Trunk Pumping Station
56	NSCC Trunk Pumping Station
57	NSCC Trunk Pumping Station
58	NSCC Trunk Pumping Station
59	Kiwi Esplanade Pump Station
60	Henwood Rd Pump Station
61	Manurewa West Pump Station
62	Stonedone Drive Pump Station
63	Cryers Rd Pump Station
64	Harris Rd Pump Station
65	Gossamer Drive Pump Station
66	Aviemore Drive Pump Station
67	Manor Park Pump Station
68	Bramley Drive Pump Station
69	Pakuranga College Pump Station
70	Argo Drive Pump Station
71	Treatment Plant Pump Station
72	Te Pure Pump Station
73	Third View Ave Pump Station
74	Omana Esplanade Pump Station
75	North Shore Treatment Plan
76	MSPW Treatment Plant

Water Supply Region A



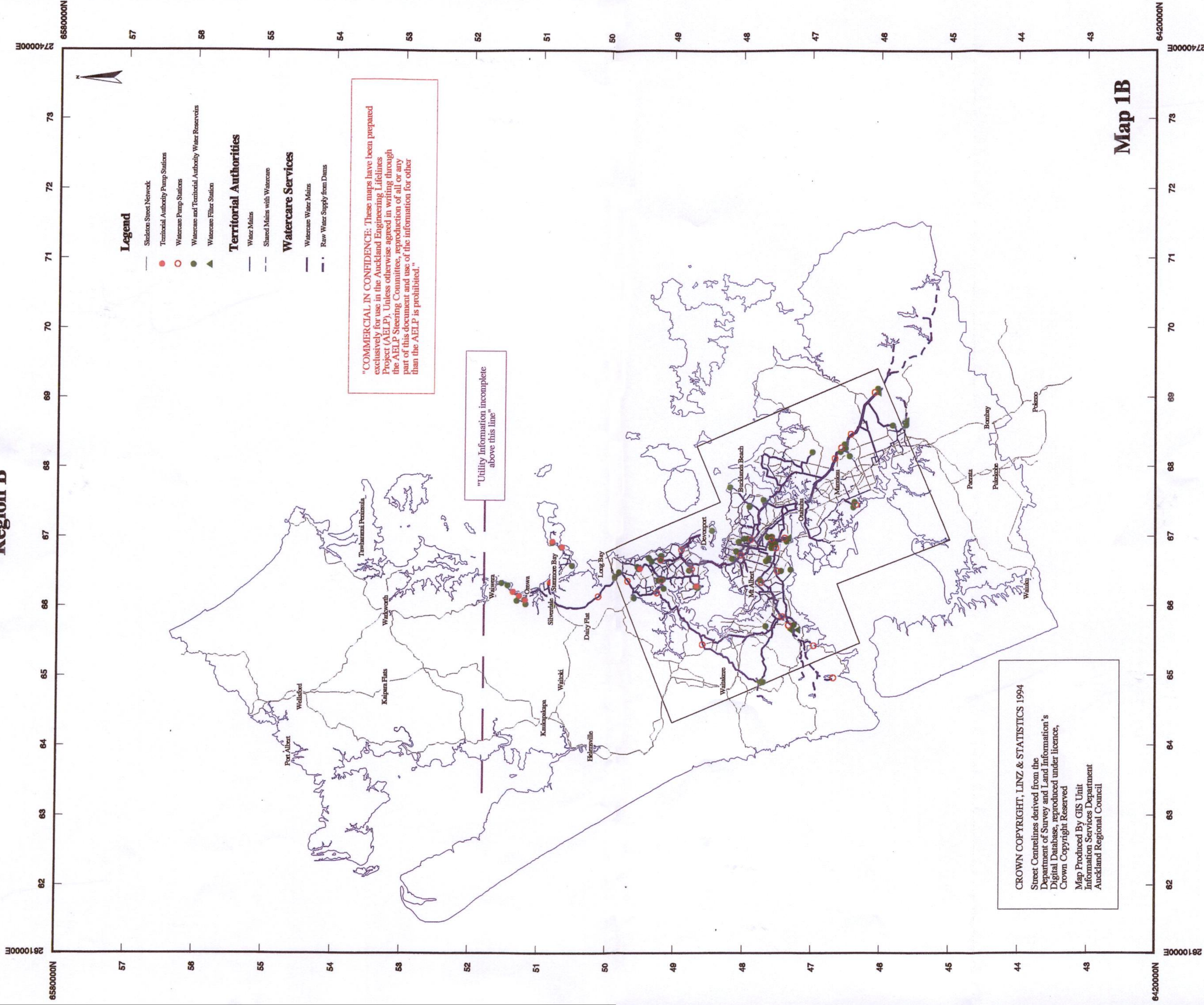
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Water Supply

Region B



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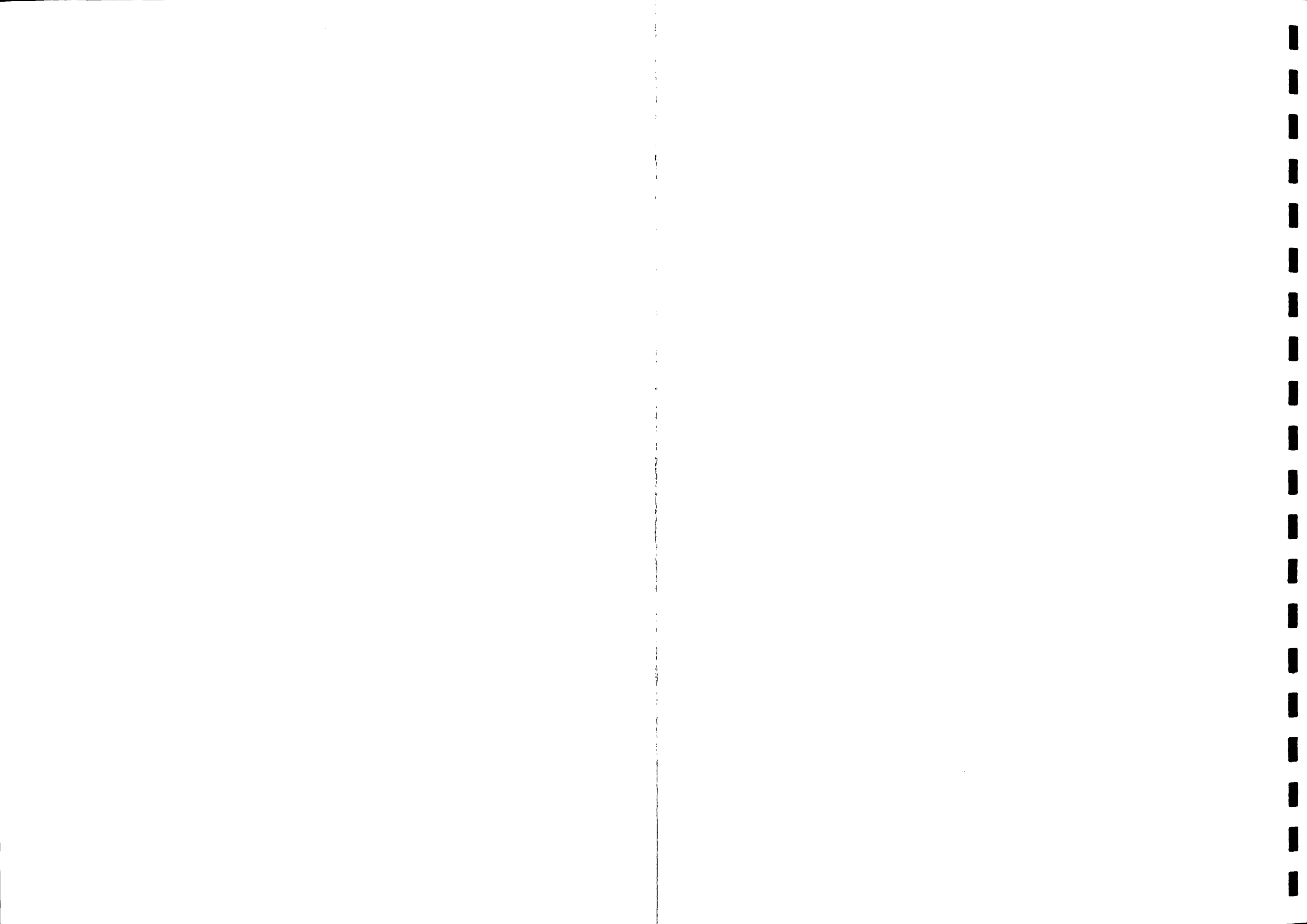
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Scale 1:200,000

Kilometres

0 2 4 6 8



Sewage Region A

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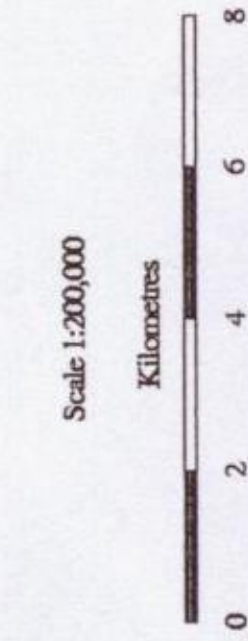
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Map 1C

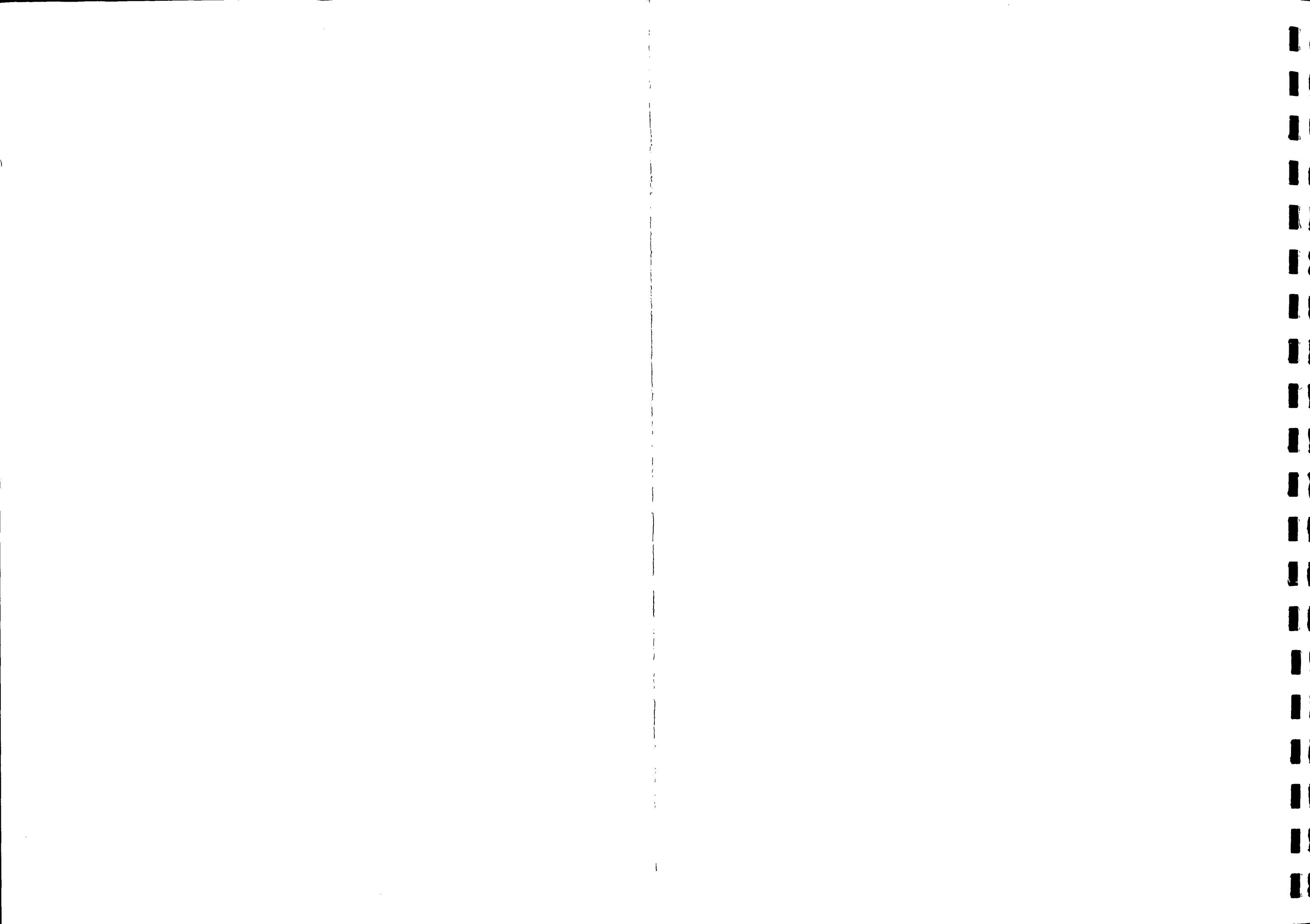
Legend

- Skeleton Street Network
- Territorial Authority Pump Stations
- Watercare Pump Stations
- Treatment Plants
- Outfalls
- Rising Mains
- Sewer Mains
- Watercare Sewer Mains

Territorial Authorities

Watercare Services

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Sewage Region B



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12.0 TRANSPORTATION

12.1 LEVEL OF INFORMATION

The level of information provided by the Transportation Task Group is divided up into five categories:

Roads:

The basis for the roading material was a document "Transport Route Hierarchy for Auckland Region", prepared by the Land Transport Strategy Technical Advisory Committee for the Regional Land Transport Committee, June 1995. The roads within the Auckland Region which are considered to be critical lifelines are the National Arterials, Regional Arterials and a number of locally significant roads which were indicated by the Local Authorities.

Rail:

The entire rail network (the Main Trunk Line) within the Auckland Region was considered to be critical lifeline. Also included was the main railyards / signals for the Auckland Region at the Westfield Station.

Ports:

The main Auckland ports were shown as the critical lifelines for water based transportation.

Airports:

Auckland International Airport is the main air lifeline for the Auckland Region. Also shown are a number of other airports within the region which could act as backup.

Other Significant Transportation Nodes:

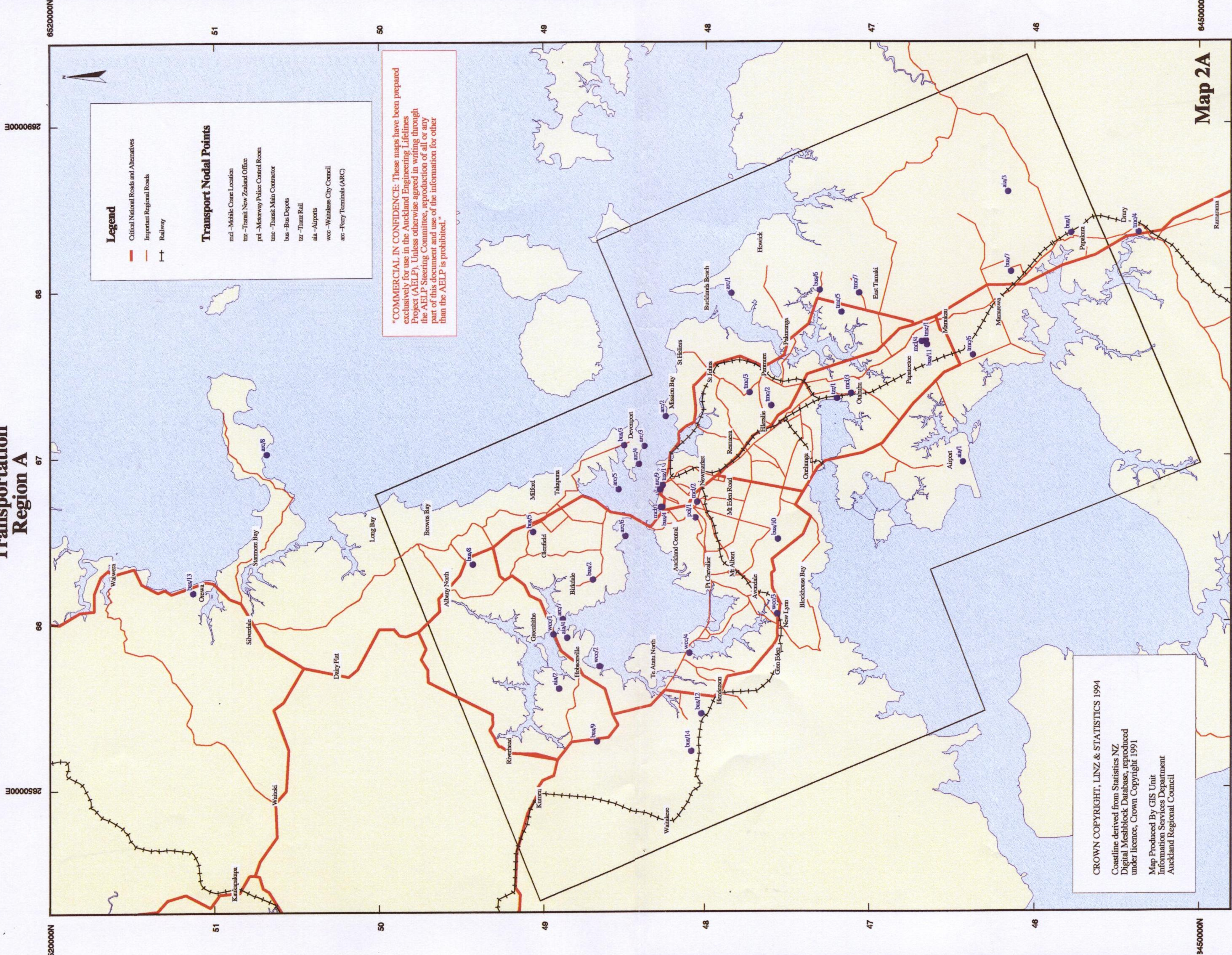
Also shown are a number of other transportation nodes which are considered critical lifelines within the Auckland Region. These include ferry terminals, wharves, and bus depots.

12.2 INDEX OF NODES

Transportation Network

BUS/1	Cityline Auckland Depot	Railway Street	Papakura
BUS/2	Birkenhead Transport Ltd. Depot	Verrans Corner	Birkenhead
BUS/3	Devonport Bus Co. Depot	23 Lake Road	Devonport
BUS/4	Yellow Bus Co. Depot	Gaunt Street	City
BUS/5	Yellow Bus Co. Depot	Diana Drive	Glenfield
BUS/6	Howick and Eastern Buses Depot	Ti Rakau Drive	East Tamaki
BUS/7	Papakura Bus Service Depot	7 Heb Place	Takanini
BUS/8	Hanhams Buses Depot	6 Henry Rose Place	Albany
BUS/9	Whenuapai Bus Co. Depot	State Highway 16	Whenuapai
BUS/10	Yellow Bus Co. Depot	May Road	Mt Roskill
BUS/11	Yellow Bus Co. Depot	Norman Spencer Drive	Wiri
BUS/12	Yellow Bus Co. Depot	Swanson Road	Swanson
BUS/13	Yellow Bus Co. Depot	Centreway Drive	Orewa
BUS/14	Ritchies Transport Holdings Depot	Swanson Road	Swanson
TZR/1	Tranzrail - Westfield Station	Railyards and signals	
AIA/1	Auckland International Airport		
AIA/2	Whenuapai Aerodrome		
AIA/3	Ardmore Aerodrome		
AIA/4	Hobsonville Aerodrome		
WCC/1	Upper Harbour Bridge	Link to North Shore	
WCC/2	Westpark Marina	Yachts	
WCC/3	Bus / Train interchange	New Lynn	
WCC/4	Marina	Launches	
ARC/1	Half Moon Bay Marina/Wharf		
ARC/2	Orakei Jetty		
ARC/3	Devonport (Victoria) Wharf		
ARC/4	Stanley Bay Wharf		
ARC/5	Bayswater Wharf/Marina		
ARC/6	Birkenhead Wharf		
ARC/7	Beach Haven Wharf		
ARC/8	Gulf Harbour Marina and Ferry Terminal		
ARC/9	Britomart CBD Ferry Terminal		
POA/1	Ports of Auckland	Main Wharves	

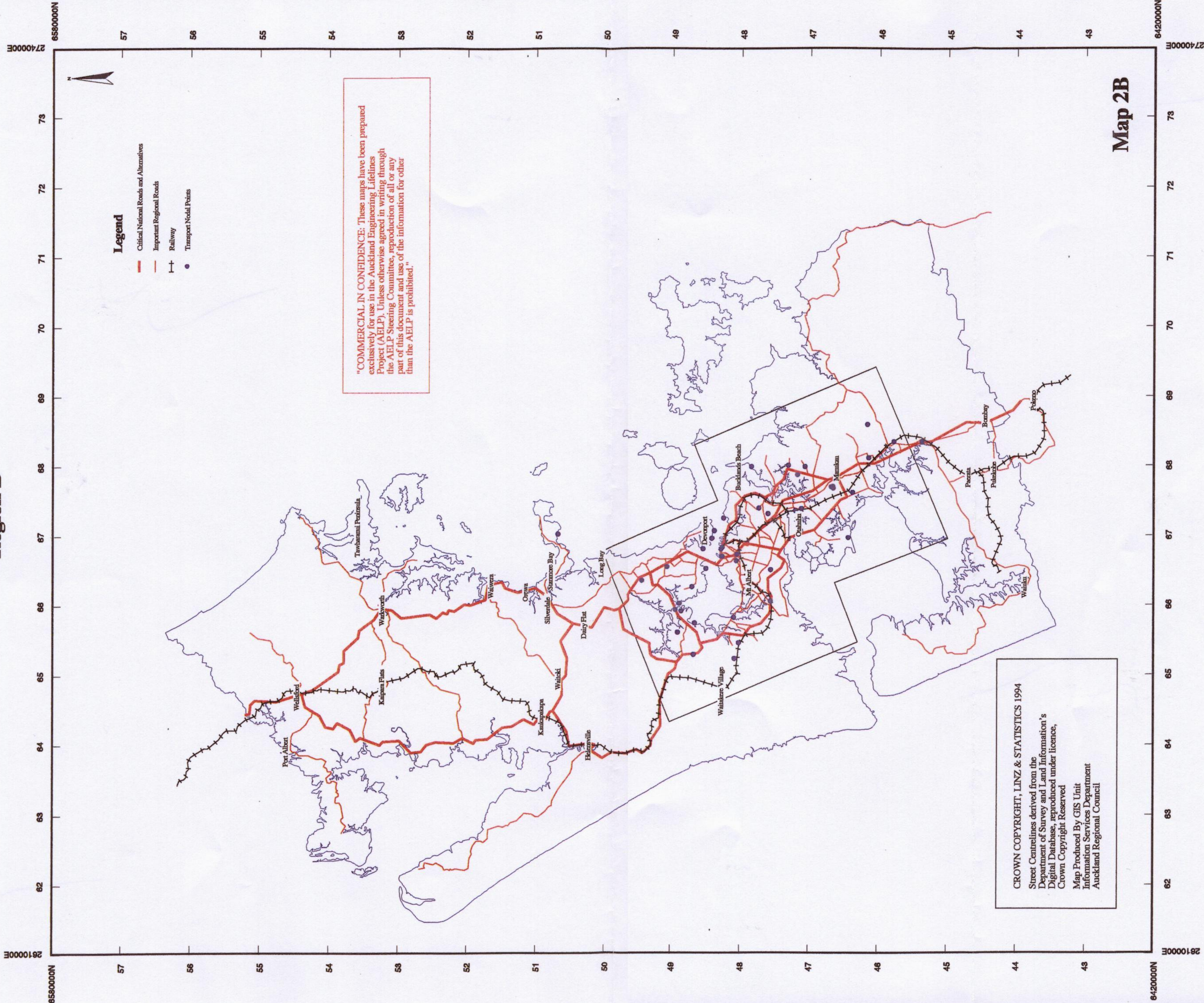
Transportation Region A



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Transportation



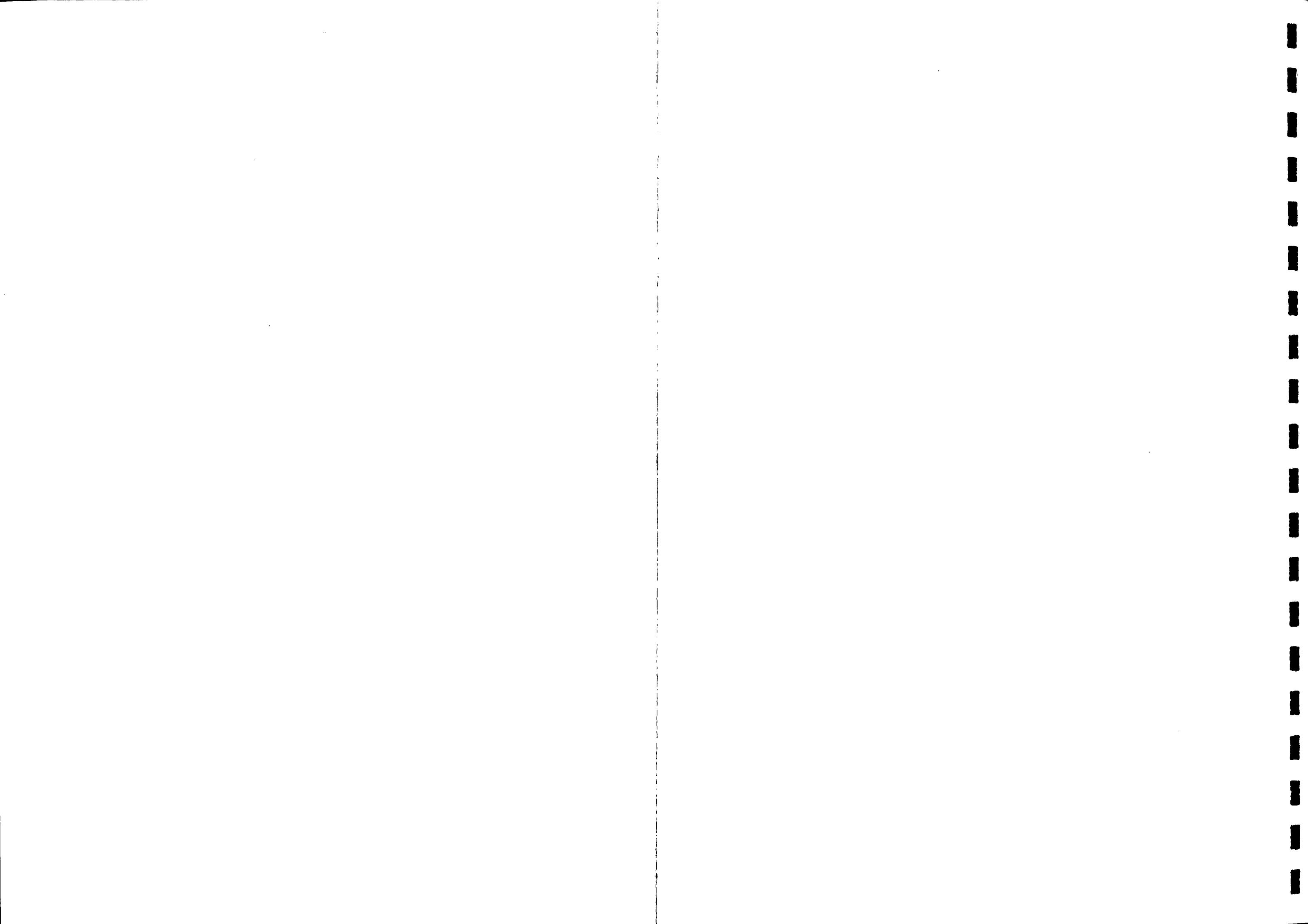
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13.0 ENERGY

13.1 LEVEL OF INFORMATION

Information on maps 3A and 3B show the following level of services;

Electricity

Principal 220kV and 110kV lines have been included on the maps only. The smaller 33kV lines are sufficiently networked and consequently have enough redundancy to indicate that they are not truly critical. Principal sub stations, office, stores and other sites important to the ongoing maintenance of electricity supply are included on the maps. Also included are a few critical users (hospitals) and their supply routes.

Petroleum

The main petroleum pipeline from Whangerei is included on the maps in addition to the main bulk storage facilities and emergency centres.

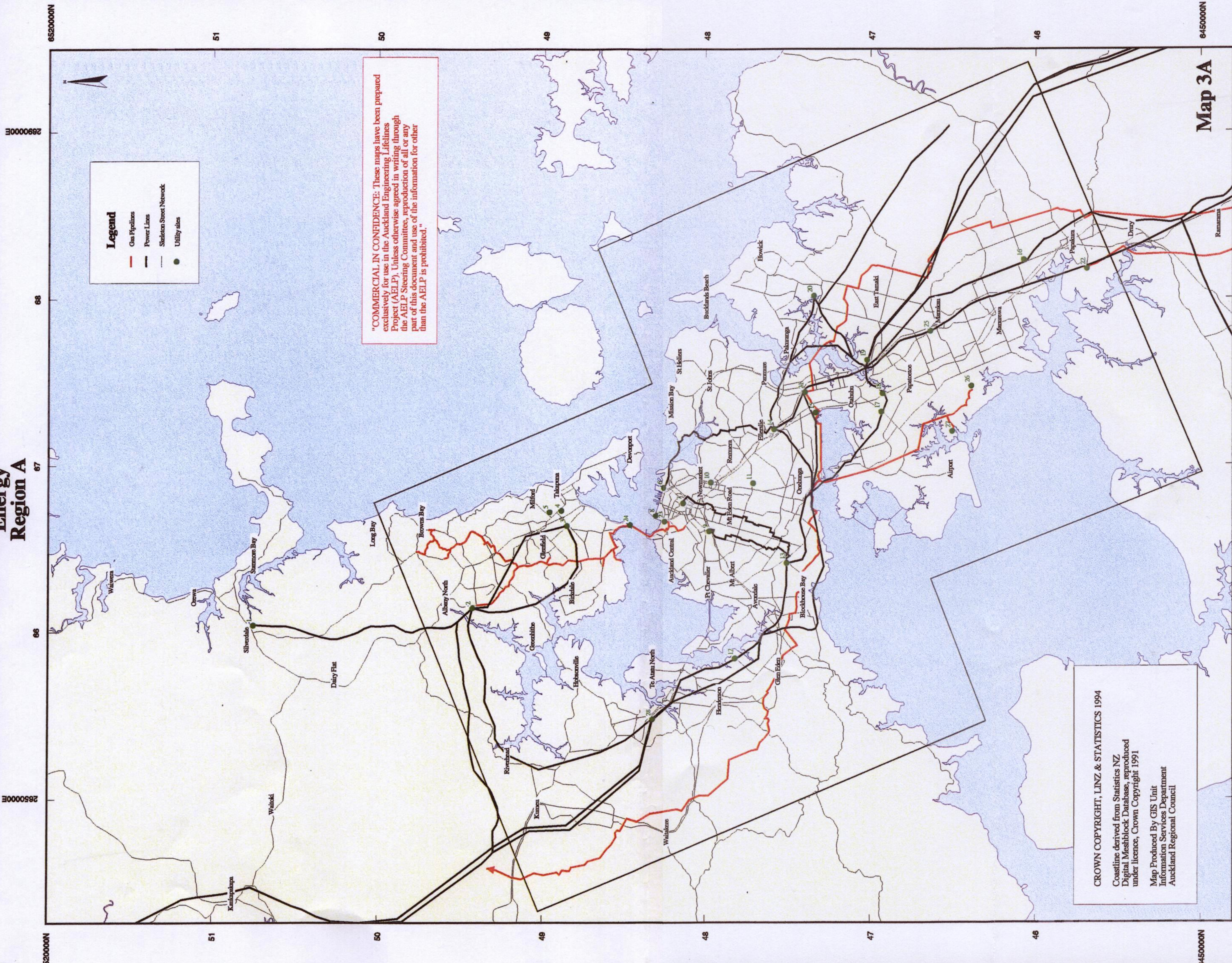
Gas

The main 8 and 14 inch NGC transmission pipeline are include with other important routes, storage and spare facilities and main buildings.

13.2 INDEX OF NODES

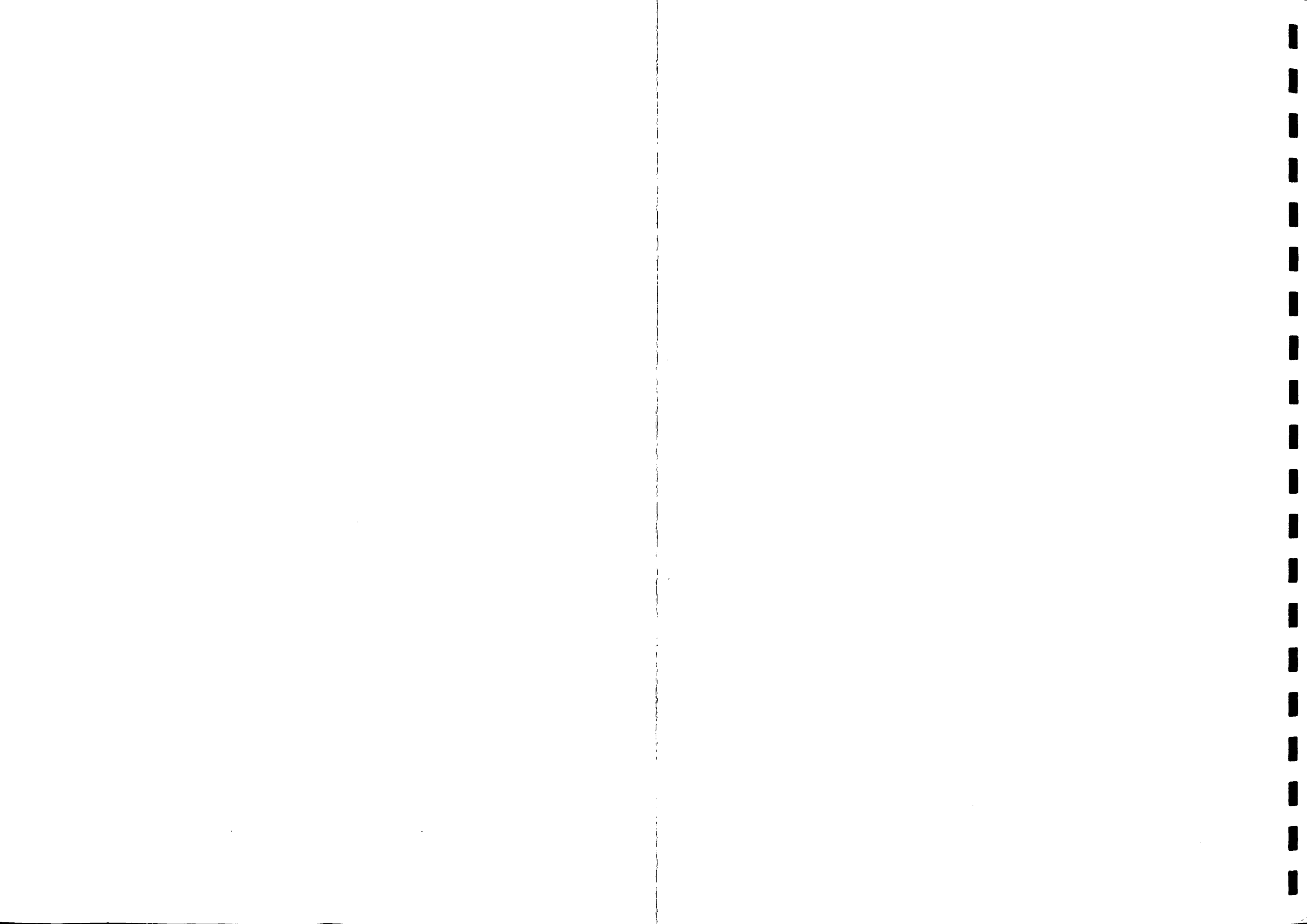
No node index has been published due to commercial and important strategic issues.

Energy Region A

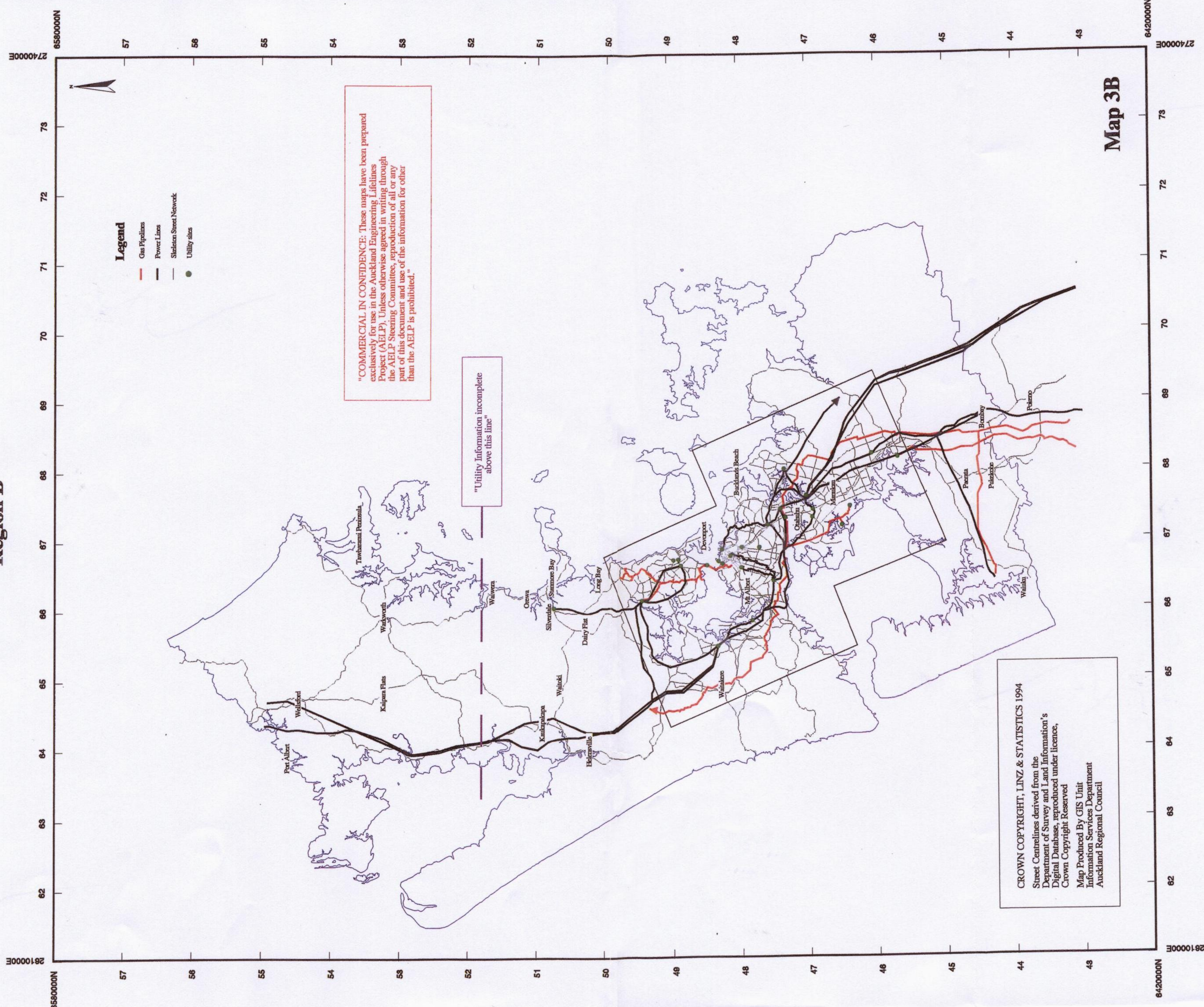


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Energy Region B




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Scale 1:200,000

Kilometres





14.0 COMMUNICATIONS

14.1 LEVEL OF INFORMATION

The maps 4A and 4B include the following important network features;

Clear:

Important routes and sites. Other sites, local cabling etc not included due to lesser impact on network. Node descriptions will not be supplied.

Bell South:

Important sites only as all sites are linked by microwave.

Telecom:

Important routes and sites. Some routes of medium importance have not been marked but details can be provided for any critical sites identified due to other collocated services or localised hazards. Node descriptions will not be supplied in bulk but will be available for individual case studies as required.

Fire:

Fire Stations and repeater sites.

Police:

Repeater sites and Comms Centre are included.

Ambulance:

Main communications centre only. Individual ambulance stations not essential for ongoing dispatch.

BCL/TVNZ:

Main transmitters and major studios only. Repeaters etc not marked due to small localised effects only.

TV3 & 4:

As for BCL.

Radio Network:

As for BCL.

Defence Force:

Main nodes only. Several backup radio comms facilities available. Roothing access to sites will be desirable but not essential. Roothing access will allow easier deployment of assistance to help other lifelines with restoration activities.

Civil Defence:

Include nodes of Bell South Centre, Bledisloe House and other TLA CD centres. These are probably already on ARC maps.

14.2 INDEX OF NODES

No node index has been published due to commercial and important strategic issues.

Communication Region A

2690000E

68

67

66

2650000E

6520000N

51

51

50

50

49

49

48

48

47

47

46

46

450000N

Map 4A

6450000N

2650000E

66

67

68

2690000E



Scale 1:200,000

Kilometres



Legend

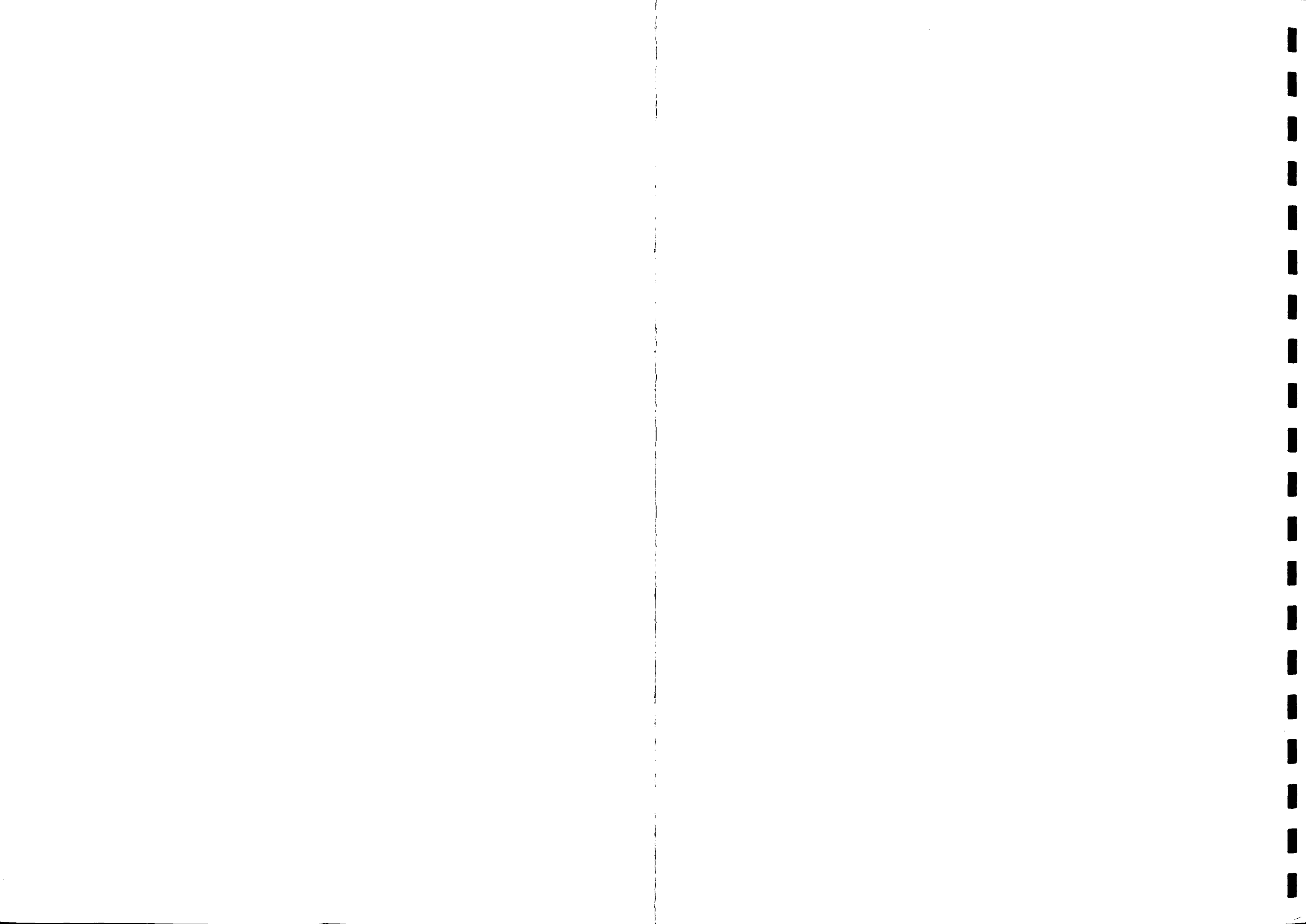
- Communication Cables
- Skeleton Street Network
- Strategic Communications Points

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Communication Region B

