

## APPENDIX F

Examples of Required  
Outputs Items 4.2(a) and (c)  
Listed in Section 4  
Example of Completed  
Risk Register (3.9.3.1)

### NOTE

THE FOLLOWING SHEETS ARE INCLUDED AS EXAMPLES ONLY.  
THE DETAILED INFORMATION RELATING TO THE LISTED BRIDGES  
IS NOT NECESSARILY CURRENT

TABLE 1: SUMMARY OF STRUCTURES IN TNZ REGION 9

State Highway	Route Position	Bridge Name	Bridge or Culvert?	Bridge Totally Excluded? See Note 1	Comments
1	915/0.00	Pukehou Rail Overbridge	Bridge	No	
1	915/3.99	Waitohu Stream Bridge	Bridge	No	
1	915/4.80	Otaki Rail Overbridge	Bridge	No	
1	915/6.71	Otaki River Bridge	Bridge	No	
1	915/10.42	Mangaone Stream Bridge	Bridge	No	
1	915/10.68	Mangaone Overflow Culvert	Culvert	Yes	
1	931/5.16	Waikanae River Bridge	Bridge	No	
1	931/5.35	Waikanae Rail Subway	Bridge	Yes	Bridge is managed by Tranz Rail Limited
1	931/7.55	Muaupoko Armco Culvert	Culvert	Yes	
1	942/0.00	Paraparaumu Rail Overbridge	Bridge	No	
1	942/0.98	Wharemauku Stream Culvert	Culvert	Yes	
1	942/5.43	Lynches Culvert	Culvert	Yes	
1	942/7.21	MacKays Culvert	Culvert	Yes	
1	942/9.29	Smiths Creek Culvert	Culvert	Yes	
1	953/0.00	Paekakariki Rail Overbridge	Bridge	No	
1	953/7.21	Pukerua Bay Footbridge	Bridge	Yes	See Report clause 2.2
1	953/7.67	Pukerua Rail Overbridge	Bridge	No	
1	953/13.25	Plimmerton Footbridge	Bridge	Yes	See Report clause 2.2
1	953/15.27	Paremata Bridge	Bridge	No	
1	969/0.17	Paremata Footbridge	Bridge	Yes	See Report clause 2.2
1	969/0.34	Papakowhai Footbridge	Bridge	Yes	See Report clause 2.2
1	969/3.70	Porirua Ramp/State Highway Overbridge	Bridge	No	
1	969/4.10	Kenepuru Stream Bridge	Bridge	No	
1	969/4.10	Kenepuru Stream Off Ramp Bridge	Bridge	No	
1	969/4.36	Mungavin North Roundabout Underpass Bridge	Bridge	No	
1	969/4.40	Mungavin West Subway	Culvert	Yes	
1	969/4.42	Mungavin South Roundabout Underpass Bridge	Bridge	No	
1	969/4.40	Mungavin East Subway	Culvert	Yes	
1	969/5.03	Ranui Culvert	Culvert	Yes	
1	969/6.83	Collins Avenue East Overpass Bridge	Bridge	No	
1	969/6.83	Collins Avenue West Overpass Bridge	Bridge	No	
1	969/7.54	Tawa Pedestrian Subway	Culvert	Yes	
1	969/9.74	Takapu Stream Culvert	Culvert	Yes	
1	979/0.00	Takapu Road Overbridge	Bridge	No	
1	979/2.41	Grenada Interchange Overbridge	Bridge	No	
1	979/3.16	Belmont Culvert	Culvert	Yes	
1	979/4.53	Johnsonville Off Ramp Overbridge	Bridge	No	
1	979/4.58	Helston Road Underpass Bridge	Bridge	No	
1	979/4.60	Johnsonville Underpass Bridge	Bridge	No	
1	979/4.69	Burgess Road Subway	Culvert	Yes	
1	979/5.06	Disraeli Street Subway	Culvert	Yes	
1	979/5.28	Johnsonville Bypass South Overbridge	Bridge	No	
1	979/5.40	Ngauranga Culvert Nos. 1 & 2	Culvert	Yes	
1	979/5.91	Ngauranga Culvert No. 3	Culvert	Yes	
1	979/6.81	Ngauranga Culvert No. 4	Culvert	Yes	
1	979/7.33	NIMT Rail Bridge 9	Bridge	Yes	Bridge is managed by Tranz Rail Limited
1	979/7.37	Ngauranga Culvert No. 5	Culvert	Yes	
1	979/7.42	Tyers Stream culvert	Culvert	Yes	
1	979/7.48	Ngauranga Culvert No. 6	Culvert	Yes	
1	979/7.56	Ngauranga Gorge Overpass Bridge	Bridge	No	
1	979/7.89	Ngauranga Overbridge Northbound	Bridge	No	
1	979/7.89	Ngauranga Overbridge Southbound	Bridge	No	
1	987/0.54	Southern Rail Overbridge	Bridge	No	
1	987/2.25	Thorndon Overbridge Structures.	Bridge	Yes	Bridge has been assessed and seismic retrofit decided
1	987/2.70	Aotea Quay Northbound On Ramp Bridge	Bridge	Yes	Bridge has been assessed and seismic retrofit decided
1	987/2.88	Aotea Quay Southbound Off Ramp Bridge	Bridge	Yes	Bridge has been assessed and seismic retrofit decided
1	987/3.68	Hobson Street Underpass Bridge	Bridge	No	
1	987/3.87	Murphy Street Subway	Culvert	Yes	
1	987/3.88	Molesworth Street Underpass Bridge.	Bridge	No	
1	987/4.06	May Street On Ramp Bridge	Bridge	No	
1	987/4.28	Hawkestone Street Underpass Bridge	Bridge	No	
1	987/4.53	Hill Street Underpass Bridge	Bridge	No	
1	987/4.58	Bowen Street Northbound & Southbound Overbridge	Bridge	No	
1	987/4.58	Tinakori Road Off-ramp	Bridge	No	
1	987/4.72	McGrath Footbridge	Bridge	No	See Report clause 2.2
1	987/4.82	Bolton Street Underpass Bridge	Bridge	No	
1	987/5.00	Aurora Terrace Underpass Bridge	Bridge	No	
1	987/5.08	Shell Gully Overbridge - Northbound	Bridge	No	
1	987/5.08	Shell Gully Overbridge - Southbound	Bridge	No	
1	987/5.08	Terrace Off-ramp Bridge	Bridge	No	
1	987/5.20	Clifton Terrace On Ramp Bridge	Bridge	No	
1	987/5.49	Everton Terrace Underpass Bridge	Bridge	No	
1	987/5.53	Bouicott Street Underpass Bridge	Bridge	No	
1	994/0.07	Ghuznee Street Underpass Bridge	Bridge	No	

Table continued on next page . . . . .

TABLE 1: SUMMARY OF STRUCTURES IN TNZ REGION 9 (continued from previous page)

State Highway	Route Position	Bridge Name	Bridge or Culvert?	Bridge Totally Excluded? See Note 1	Comments
2	858/2.17	Ruamahanga River Bridge	Bridge	No	
2	873/3.04	Water Race Culvert	Culvert	Yes	
2	873/3.61	Box Culvert	Culvert	Yes	
2	873/4.23	Opaki Rail Overbridge	Bridge	No	
2	883/0.15	Waipoua No.2 Bridge	Bridge	No	
2	883/5.78	Waingawa River Bridge	Bridge	No	
2	883/9.28	Halfway Culvert	Culvert	Yes	
2	883/14.63	Booth Culvert	Culvert	Yes	
2	883/19.96	Mangatarere Bridge	Bridge	No	
2	883/20.18	Beef Creek Bridge	Bridge	No	
2	883/20.39	Waiohine River Bridge	Bridge	No	
2	905/11.44	Tauherenkau River Bridge	Bridge	No	
2	905/14.97	Donalds Creek Bridge	Bridge	No	
2	921/1.24	Rimutaka No.1 Bridge	Bridge	No	
2	921/2.43	Rimutaka No.2 Bridge	Bridge	No	
2	921/2.95	Rimutaka No.3 Bridge	Bridge	No	
2	921/3.18	Rimutaka No.4 Bridge Southbound	Bridge	No	
2	921/3.18	Rimutaka No.4 Bridge Northbound	Bridge	No	
2	921/4.36	Rimutaka No.5 Bridge	Culvert	Yes	
2	921/5.02	Rimutaka No.6 Bridge	Bridge	No	
2	921/7.16	Rimutaka No.7 Bridge	Bridge	No	
2	931/6.81	Pakuratahi River Bridge	Bridge	No	
2	946/0.00	Mangaroa River Bridge	Bridge	No	
2	946/2.65	Brown Owl Subway	Culvert	Yes	
2	946/5.55	Totara Park South Culvert	Culvert	Yes	
2	946/6.66	Gibbons Street Culvert	Culvert	Yes	
2	946/8.84	Moonshine Bridge	Bridge	No	
2	946/11.42	Bluff North Culvert	Culvert	Yes	
2	946/12.14	St. Pat's. Culvert	Culvert	Yes	
2	946/12.99	Keith George Culvert	Culvert	Yes	
2	946/14.20	Culvert Box	Culvert	Yes	
2	946/15.28	Manor Park Subway	Culvert	Yes	
2	962/0.01	Haywards Culvert	Culvert	Yes	
2	962/2.89	Liverton Road Culvert	Culvert	Yes	
2	962/4.20	Charles Street Footbridge	Bridge	Yes	See Report clause 2.2
2	962/5.07	Belmont Stream Culvert	Culvert	Yes	
2	962/5.09	Belmont Subway	Culvert	Yes	
2	962/6.90	Casa Loma Culvert	Culvert	Yes	
2	962/8.64	Normandale Overbridge	Bridge	No	
2	962/11.06	Korokoro Footbridge	Bridge	Yes	See Report clause 2.2
2	962/11.90	Korokoro Stream Bridge	Bridge	No	
2	962/11.97	Petone Overbridges	Bridge	No	
2	962/16.78	Ngauranga Off-ramp Overbridge/Stream Culvert	Bridge	No	
2	962/16.92	W.M.E. Rail Tunnel Bridge	Bridge	No	
53	0/1.28	Donalds Creek Bridge	Bridge	No	
53	0/4.36	Lower Tauherenkau River Bridge	Bridge	No	
53	0/6.08	Moriarty's Culvert	Culvert	Yes	
53	0/6.40	Wendens Culvert	Culvert	Yes	
53	0/10.15	Te Marie-Merwoods Culvert	Culvert	Yes	
53	0/14.20	Jenkins Dip Floodway Bypass Bridge	Bridge	Yes	Excluded as structure only in use during flood conditions
53	0/14.79	Wahenga Bridge	Bridge	No	
53	0/15.39	Box Culvert	Culvert	Yes	
53	0/15.55	Herricks Culvert	Culvert	Yes	
58	0/4.64	Old Tip Site Culvert	Culvert	Yes	
58	0/5.99	Pauatahanui Stream No. 1 Bridge	Culvert	Yes	
58	0/6.86	Pauatahanui Stream No. 2 Bridge	Bridge	No	
58	0/7.47	Pauatahanui Stream No. 3 Bridge	Bridge	No	
58	0/8.36	Pauatahanui Stream No. 4 Bridge	Bridge	No	
58	0/8.97	Pauatahanui Stream No.7 Bridge	Bridge	No	
58	0/10.38	Pauatahanui Stream Bridge	Bridge	No	
58	0/11.91	Duck Creek Culvert	Culvert	Yes	

Note : 1. Total exclusion is based generally on Clause 3.1 of the Manual for Seismic Screening of Bridges.



Sorted In order of Selsmic Attributes Grade

State Highway	Route Position	Bridge Name	Partially Excluded In Stage 3 of Screening Procedure Yes/No?	Selsmic Attributes Grade (SAG)	SAG Ranking
1	915/6.71	Otaki River Bridge	No	0.22	1
1	915/0.00	Pukehou Rail Overbridge	No	0.18	2
1	931/5.16	Waikanae River Bridge	No	0.17	3
1	953/7.67	Pukerua Rail Overbridge	No	0.12	4
1	942/0.00	Paraparumu Rail Overbridge	No	0.12	5
1	987/3.88	Molesworth Street Underpass Bridge	No	0.12	6
1	987/4.06	May Street On Ramp Bridge	No	0.12	7
1	987/5.08	Shell Gully Overbridge - Northbound	No	0.12	8
1	987/5.08	Shell Gully Overbridge - Southbound	No	0.11	9
1	987/4.58	Bowen Street Northbound & Southbound Overbridge	No	0.11	10
1	987/0.54	Southern Rail Overbridge	No	0.10	11
1	987/4.53	Hill Street Underpass Bridge	No	0.10	12
1	987/5.53	Boulcott Street Underpass Bridge	No	0.09	13
1	987/3.68	Hobson Street Underpass	No	0.09	14
1	969/6.83	Collins Avenue East Overpass Bridge	No	0.09	15
1	969/6.83	Collins Avenue West Overpass Bridge	No	0.09	16
1	987/4.72	McGrath Footbridge	No	0.08	17
1	987/4.58	Tinakori Road Off-ramp	No	0.08	18
1	979/4.58	Helston Road Underpass Bridge	No	0.08	19
1	987/5.08	Terrace Off-ramp Bridge	No	0.08	20
1	953/0.00	Paekakariki Rail Overbridge	No	0.08	21
1	953/15.27	Paremata Bridge	No	0.08	22
1	987/5.20	Clifton Terrace On Ramp Bridge	No	0.08	23
2	883/20.39	Waiohine River Bridge	No	0.08	24
2	931/6.81	Pakuratahi River Bridge	No	0.07	25
1	979/7.56	Ngauranga Gorge Overpass Bridge	No	0.07	26
2	962/8.64	Normandale Overbridge	No	0.07	27
2	962/11.90	Korokoro Stream Bridge	No	0.07	28
1	987/4.28	Hawkestone Street Underpass Bridge	No	0.07	29
1	979/4.60	Johnsonville Underpass Bridge	No	0.07	30
2	873/4.23	Opaki Rail Overbridge	No	0.06	31
2	962/11.97	Petone Overbridges	No	0.06	32
1	987/5.49	Everton Terrace Underpass Bridge	No	0.06	33
1	915/3.99	Waiohu Stream Bridge	No	0.05	34
2	905/11.44	Tauherenikau River Bridge	No	0.05	35
58	0/7.47	Pauatahanui Stream No. 3 Bridge	No	0.05	36
2	883/0.15	Waipoua No.2 Bridge	No	0.05	37
2	883/19.96	Mangatarere Bridge	No	0.04	38
2	858/2.17	Ruamahanga River Bridge	No	0.04	39
2	921/3.18	Rimutaka No.4 Bridge Northbound	No	0.04	40
53	0/4.36	Lower Tauherenikau River Bridge	No	0.04	41
53	0/14.79	Waihenga Bridge	No	0.04	42
2	905/14.97	Donalds Creek Bridge	No	0.04	43
53	0/1.28	Donalds Creek Bridge	No	0.02	44
1	987/5.00	Aurora Terrace Underpass Bridge	Yes		
2	883/20.18	Beef Creek Bridge	Yes		
1	987/4.82	Bolton Street Underpass Bridge	Yes		
1	994/0.07	Ghuznee Street Underpass Bridge	Yes		
1	979/2.41	Grenada Interchange Overbridge	Yes		
1	979/5.28	Johnsonville Bypass South Overbridge	Yes		
1	979/4.53	Johnsonville Off Ramp Overbridge	Yes		
1	969/4.10	Kenepuru Stream Bridge	Yes		
1	969/4.10	Kenepuru Stream Off Ramp Bridge	Yes		
1	915/10.42	Mangaone Stream Bridge	Yes		
2	946/0.00	Mangaroa River Bridge	Yes		
2	946/8.84	Moonshine Bridge	Yes		
1	969/4.36	Mungavin North Roundabout Underpass Bridge	Yes		
1	969/4.42	Mungavin South Roundabout Underpass Bridge	Yes		
2	962/16.78	Ngauranga Off-ramp Overbridge / Stream Culvert	Yes		
1	979/7.89	Ngauranga Overbridge Northbound	Yes		
1	979/7.89	Ngauranga Overbridge Southbound	Yes		
1	915/4.80	Otaki Rail Overbridge	Yes		
58	0/10.38	Pauatahanui Stream Bridge	Yes		
58	0/6.86	Pauatahanui Stream No. 2 Bridge	Yes		
58	0/8.36	Pauatahanui Stream No. 4 Bridge	Yes		
58	0/8.97	Pauatahanui Stream No.7 Bridge	Yes		
1	969/3.70	Porirua Ramp/State Highway Overbridge	Yes		
2	921/1.24	Rimutaka No.1 Bridge	Yes		
2	921/2.43	Rimutaka No.2 Bridge	Yes		
2	921/2.95	Rimutaka No.3 Bridge	Yes		
2	921/3.18	Rimutaka No.4 Bridge Southbound	Yes		
2	921/5.02	Rimutaka No.6 Bridge	Yes		
2	921/7.16	Rimutaka No.7 Bridge	Yes		
1	979/0.00	Takapu Road Overbridge	Yes		
2	962/16.92	W.M.E. Rail Tunnel Bridge	Yes		
2	883/5.78	Waingawa River Bridge	Yes		

NOTES:

1. Selsmic Attributes Grade = Hazard Index x Importance Index x Vulnerability Index
2. With sheet protected, columns E, F, G, H and AA of the upper table are protected, as is column F of the lower table.
3. Data is entered into the upper table to calculate the values of Hazard, Importance and Vulnerability indices, and the SAG.
4. Data is copied to columns A to E of the the lower table and sorted by descending value of SAG to obtain the ranking order. Note that the contents of column E must be copied to the lower table as "Values"
5. Refer to the Appendix C for detailed steps for using the spreadsheet.

SUMMARY OF RISK ASSESSMENT, RANKING INDICATORS AND BRIDGE RANKINGS FOR DETAILED ASSESSMENT, FOR BRIDGES IN TNZ REGION :

PREPARED BY, AND DATE : D.K. Kirkcaldie 12.10.98
CHECKED BY, AND DATE : H. E. Chapman 12.11.98

Table with columns: State Highway, Route Position, Bridge Name, Seismic Zone Factor Z, Risk Event No, Description of Risk Event, Consequences, PGA Causing Risk Event g, Likelihood of Risk Event Figure 4, Consequence Classifications Table 2 Table 3, Level of Risk Table 4, Treatment Options, Rough Order Cost (ROC) of Retrofit \$000, Depreciated Value \$000, Replacement Value \$000, Ratio: ROC to Depreciated Value, Ratio: ROC to Replacement Value, Economic Ranking Indicator See Note 3, Risk Event Rank, Bridge Rank for Detailed Assessment See Note 1, Do drugs show settlement slab? Yes/No.

Notes for reader's information :
1. Bridge rank for detailed seismic assessment is derived from the ranking procedure - see Section 3.11 of the Transit New Zealand "Manual for Seismic Screening of Bridges".
2. For details of the procedure used for the risk assessment see Section 3.9 of the Transit New Zealand "Manual for Seismic Screening of Bridges".
3. For derivation of the economic ranking indicator see Section 3.10 of the Transit New Zealand "Manual for Seismic Screening of Bridges".
4. Risk events are as detailed on the risk register (Form 5) for individual bridges.

