

**BOARD OF INQUIRY
HAUĀURU MĀ RAKI WIND FARM PROPOSAL**

IN THE MATTER of The Resource Management Act 1991

AND

IN THE MATTER of Resource consent applications by Contact Wind Limited to the Waikato District Council in respect of the Hauāuru mā raki Wind Farm

AND

IN THE MATTER of the notices of requirement by Contact Energy Ltd to the Waikato District Council in respect of the Hauāuru mā raki Wind Farm

BRIEF OF EVIDENCE OF ALASDAIR DAVID ANGUS GRAY

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Introduction And Qualifications

1. My name is Alasdair David Angus Gray. I hold a Bachelor of Science degree (Civil Engineering, 1986) from the University of Aberdeen. I am a Professional Member of the Institution of Professional Engineers New Zealand and a Chartered Professional Engineer.
2. I have worked in the transportation field as a civil/transportation engineer for more than 20 years and have been involved at a senior level in the investigation and development of projects in Waikato District and the Waikato region for more than 10 years.
3. I am based in Hamilton and established my own consultancy, Gray Matter Ltd, in January 2006. For 5 years prior to that I was Group Engineer, Asset

Development, with Opus International Consultants Ltd in Hamilton, managing approximately 30 technical staff in a range of road projects. For the previous 5 years I was a senior civil/transportation engineer with Maunsell in Hamilton, where my duties included managing the materials testing laboratory manager.

4. I am familiar with the issues arising in and around the Waikato and Franklin Districts, having provided advice to Waikato District Council and other local authorities, Environment Waikato, NZ Transport Agency, and developers on projects in the area over the past 13 years. I have the following specific experience with respect to the matters currently in front of the board:

- Consultant civil/transportation engineer for Road Controlling Authorities assisting in the review of consent applications including the WEL wind farm development at Te Uku, Transpower North Island Grid Upgrade, mining, quarries, plan change proposals, and industrial, commercial and residential developments
- Consultant civil/transportation engineer for developers, landowners and local authorities preparing traffic impact assessments for developments proposals including quarries, landfills, special events, residential developments and sporting and exhibition venues
- Team Leader for the State Highway 2 Strategic investigation, including scoping studies for the SH1/SH2 interchange and Kopuku section, investigation and designation of the Maramarua Deviation, and construction of the SH2 Pokeno to Mangatarata Safety Improvements project
- Team Leader and reviewer for the Waipa District Council road rehabilitation investigation and design programme for 5 years

Role and Summary of Evidence to be Presented

5. I was initially engaged by Waikato District Council to assist them in their regulatory capacity prior to the applications being called in by the Minister for the Environment. I also assisted in the Section 92 (RMA) review for Waikato District Council. I worked with representatives of Waikato District Council, Franklin District Council and Environment Waikato in discussion with the Applicant's representatives on draft conditions for the proposal.
6. I have now been retained by the Waikato and Franklin District Councils to provide evidence in support of their neutral submissions in relation to all of the applications for resource consent and notices of requirement lodged by Contact Wind Limited and Contact Energy Limited (The Applicant) for the proposed Waikato Wind Farm. My role primarily relates to the effects of construction traffic on the road network.
7. I confirm that I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court, Consolidated Practice Note (2006), and agree to comply with that Code of Conduct. I will state where I have relied on the statements of evidence of others.
8. My evidence is based on the following information:
 - The Hauauru ma raki – Waikato Wind Farm Resource Consent Applications, Notices of Requirement and Assessment of Environmental Effects, June 2008 and Section 92 Responses dated 3 October 2008 and 5 December 2008;
 - The evidence of Mr Richard Galloway (Transport/Traffic Issues) and Mr Stephen Daysh (Proposed Conditions); and,
 - Site visits and RAMM (Road Asset Maintenance Management system) data provided by Council staff.

9. My evidence focuses on construction traffic effects and is in four parts following these introductory sections, comprising:

- An overview of the traffic-related concerns raised by Waikato and Franklin District Councils in their neutral submissions;
- My summary and assessment of the potential impact on local roads in the Waikato and Franklin Districts;
- Comments on the application of conditions to mitigate or remedy the adverse affects of the additional traffic associated with the project; and,
- My conclusions.

10. There are also two attachments showing:

- The draft conditions proposed by the applicant relevant to roads and traffic with my comments and suggestions for modifications; and,
- A strikethrough version of the conditions incorporating my suggestions for modifications.

Overview of Traffic-Related Concerns Raised by WDC and FDC

11. The WDC and FDC submissions are similar. Both raise concerns about the potential effects of the project including roads and traffic safety (WDC submission sections 1.2.3 and 1.2.4, FDC submission sections 2.3, 2.4 and 2.11). The concerns relate to the large volume of construction traffic associated with construction and the potentially significant adverse effects of that traffic on the safe and efficient operation and infrastructure of the local road networks. The submissions also raise concerns about the effects on recreation and tourism, human health, social cohesiveness and economic effects. The potential effects related to traffic include:

- Reduced safety because of higher traffic volumes and larger vehicles;
- Reduced efficiency because of higher traffic volumes, oversize vehicles and temporary traffic management;

- Degradation of the road pavement (surface and subsurface) caused by additional heavy vehicles;
 - Dust, noise and vibration; and,
 - Effects of visitor traffic on the safety, efficiency and amenity of the local road network once the wind farm is operational.
12. The applicant has proposed measures and draft conditions to avoid, remedy or mitigate the adverse effects of the proposal. These have been drafted in consultation with the Councils' representatives, including me. The Councils' submissions seek to ensure that, should the consents and designations be approved, the measures to avoid, remedy or mitigate the adverse effects of the proposal are adequate and appropriate and reflected in conditions imposed.

Summary and Assessment of Potential Impact on Local Roads

13. The application (Galloway, paragraph 74) indicates that the construction of the proposed wind farm will result in an average of approximately 290 - 330 vehicle movements daily - comprising construction personnel (220 - 250 movements), quarry traffic (30 - 35 movements), consumables and construction materials (35 - 40 movements) and oversize loads (2-3 movements).
14. The construction is described (Galloway, paragraph 36) as taking place over approximately 5 years as follows:
- Stage 1 (Franklin) Months 1 - 20 Main access from north and centre
 - Stage 2 (Franklin, Waikato) Months 18 - 45 Main access from south
 - Stage 3 (Waikato) Months 43 - 53 Main access from south
15. In order to permit access for the larger turbine and substation components the applicant proposes approximately 47 localised road improvements at bends. There will also be approximately 21 entranceways formed for site accesses.

16. Following construction there may be approximately 20 movements/day for operational and maintenance activities and there may be visitor movements dropping from 130 movements/day during initial construction to occasional visitors in the longer term.
17. I generally agree with Mr Galloway's assessment (Galloway, paragraph 7) that the ongoing traffic effects of the project will be minimal, but only if any permanent entranceways, road improvements and viewing locations are adequate, appropriately located and designed.
18. I also agree with Mr Galloway's assessment that the efficiency and safety impacts of the construction stage of the project can be managed to be minor (Galloway, paragraph 6), but only if the surface condition of the affected roads is adequately maintained and appropriate temporary traffic management carried out. The applicant proposes to deliver this through the development and implementation of a Pavement, Bridge Rehabilitation and Maintenance Plan for each section of road affected and a Construction Traffic Management Plan.
19. The applicant proposes Construction Zones in accordance with the Heavy Motor Vehicle Regulations 1974 to be in effect in the roads in the vicinity of each stage of construction to permit oversize vehicles to operate. This permits non-standard vehicles such as large dump trucks and construction plant to operate on the roads but does not change other road rules or rights of access. Within the construction zones the applicant would be responsible for the maintenance and rehabilitation of the roads, at the consent-holder's cost (Galloway, paragraph 173). The standards for maintenance would at least match the Councils' levels of service. Temporary traffic management would be necessary within the construction zone to ensure the safety of site and local traffic. The applicant proposes that regular road users and school buses would be provided with radio communication and external traffic controlled at manned gatehouses (Galloway, paragraphs 79, 80, 148).

20. Outside the construction zone the Pavement, Bridge Rehabilitation and Maintenance Plan and the subsequent report on the final standard of the pavement and structures would identify improvement works to be completed by the applicant prior to construction, maintenance arrangements and rehabilitation work. My understanding is that the Councils would continue to be responsible for routine maintenance but the consent-holder would be responsible for the costs of any defects attributable to construction.
21. The applicant proposes that the consent-holder would compensate for the early consumption of pavement life that would result from the additional heavy vehicles associated with construction. This would be by means of a cash payment based on a comparison of pavement performance under different traffic loadings and the cost of forward-funding renewal works.
22. Without appropriate management to avoid, mitigate or remedy the adverse effects of the traffic, the proposed wind farm could have potentially significant adverse effects on WDC's and FDC's infrastructure and the Councils' ability to operate their road networks in a safe and efficient manner. The draft conditions relating to traffic and roads presented in Mr Daysh's evidence are intended to provide for appropriate management. I consider that as long as the conditions effectively meet the applicant's intent (Galloway, paragraph 181) that the net effect of construction traffic on each district's roads is nil or better, that WDC's and FDC's concerns relating to roads and traffic would be resolved.

Comments on the Application of Conditions

23. Throughout the discussions between the Councils' and the applicant's representatives, the applicant has clearly stated (for example, Section 92 response: Schedule C, Item C.2, 3 October 2008) that their intent is that the full cost of road use is met by the consent-holder and that they would work closely with the Councils to minimise the adverse effects. This is reflected in the draft conditions. In addition, pavement and bridge rehabilitation, traffic management, monitoring, design standards and detailed design are all subject to the approval of the relevant local authority so the Councils can ensure that

their concerns are addressed in the relevant plans. In general, the standards for design, maintenance and traffic management on roads are reasonably well defined in accepted standards. These are set out in the District Council's Engineering Standards, and various standards and guidelines listed in the New Zealand Transport Agency Standards and Guidelines Manual that public roads need to comply with to be considered for financial assistance.

24. The draft conditions resolve most of the Councils' concerns relating to traffic. I comment on the draft conditions below and suggest modifications. I have attached a table (Attachment A) including the complete draft conditions for FDC and WDC with my comments and suggestions alongside, and (Attachment B) a strikethrough version of the draft conditions amended to include my suggestions for modification. It may be convenient to refer to Attachment A which includes the following paragraphs 25 to 39 for the following comments.

25. **Condition 7.1:** "...in general accordance with those described in the Traffic Design Group report ..." This condition is satisfactory. It defines nature and levels of traffic expected and that the assessment has been based upon. It should be read in conjunction with condition 7.12 defining a 15% change in volume as the level at which approval for changes is needed.

26. **Condition 7.2:** "Pavement, Bridge Rehabilitation and Maintenance Plan." The general approach and details of the plan are satisfactory when considered with the condition 7.13 objective to ensure that the net effect of the wind farm's construction on pavement and bridge condition is nil or better compared to the results of the surveys completed under condition 7.2 a) and b). Mr Galloway (paragraph 175) states that for roads outside the construction zones, the costs associated with strengthening in advance, or rehabilitating once damage is evident, will be borne by Contact Wind. Mr Galloway (paragraph 173) states that within the Construction Zones, these (monitoring, maintenance and renewal) should be at the full cost of Contact Wind, as the extent of pavement effects will almost solely be brought about by the construction traffic. The allocation of costs is not explicitly stated in the draft

condition. It is clearly understood by Council and Contact staff and representatives that the full cost of road access is to be met by the consent-holder. Since the Pavement, Bridge Rehabilitation and Maintenance Plan is subject to the approval of Council staff, the risk of misunderstanding is low but it may be appropriate to be clear that all costs associated with the Pavement, Bridge Rehabilitation and Maintenance Plan are to be met by the consent-holder unless otherwise agreed by the relevant road controlling authority. In addition, there does not appear to be a condition to give effect to the plan. I suggest that Condition 7.2 be extended with an additional paragraph such as

“At all times during the construction period, the consent holder shall comply with the approved Pavement, Bridge Rehabilitation and Maintenance Plan referred to in condition 7.2. All costs associated with the Pavement, Bridge Rehabilitation and Maintenance Plan are to be met by the consent-holder unless otherwise agreed by the Franklin District Council (or, as appropriate Waikato District Council).”

27. **Condition 7.3:** “Construction Traffic Management Plan.” This is satisfactory and subject to the approval of the relevant road controlling authority. The Transit NZ Code of Practice for Temporary Traffic Management (and the Local Roads Supplement for WDC) is a highly prescriptive and nationally recognised guideline that sets out permitted equipment, methods, standards (e.g. maximum delays) and qualifications. This management plan approach has little risk of misunderstanding and is practical because the details for the duration and seasons of construction are not yet finalised. Although overweight and over-dimension loads are subject to a separate permit system it is appropriate for them to be managed as part of the overall traffic management plan.
28. **Condition 7.4:** “Comply with the approved Construction Traffic Management Plan.” This gives effect to the construction traffic management plan and is appropriate.
29. **Condition 7.5:** “Detailed design of accesses.” The locations of the accesses are fixed in the application and drawings attached to the conditions. The

accessways are subject to the approval of the relevant authority and are expected to comply with the relevant Council engineering standards except that they will be wider to accommodate over-dimension loads.

30. **Condition 7.6:** “Improved delineation.” This provides a safety improvement for the relevant roads approaching the site. It does result in a minor maintenance burden for the Councils but they can choose whether to maintain or continue the delineation.
31. **Condition 7.7:** “The consent holder shall construct public viewing areas.” This is satisfactory. Monitoring (Condition 7.11) should include visitor traffic and the review condition provides the opportunity for Councils to respond to higher than expected numbers of visitors prior to the end of construction.
32. **Condition 7.8:** “Design standards and detailed designs.” This is appropriate, with proposals subject to the approval of the relevant authority.
33. **Condition 7.9:** “Liaison with schools.” This is appropriate and would have been expected as part of an effective traffic and construction management plan.
34. **Condition 7.10:** “Maintain property access.” This appears appropriate if clarification was necessary. Operating sections of road as Construction Zones does not affect access rights. The condition refers to temporary standards. From the Councils’ perspectives, the long duration of the project means that temporary standards would only apply when localised short duration works were being completed that directly affected the road corridor.
35. **Condition 7.11:** “Monitoring.” This appears appropriate. It would also be useful to monitor visitor numbers to ensure that they are as anticipated. This could be done by recording the number of visitor vehicles at the manned gatehouses. I suggest inserting 7.11 (e) “*Visitors entering the site to view the wind farm*”.

36. **Condition 7.12:** “No materials over 15% in excess.” This provides some flexibility for the consent-holder to alter materials or methods without being considered a significant increase, and protects the road controlling authorities from route changes or significant changes in methodology such as aggregate sourcing, water sourcing or the location of batching plants. It may be appropriate to define the quantities as they are described in the application and would be measured (by volume, vehicle numbers and Equivalent Standard Axles). Since the compensation in 7.13 is now pre-calculated based on the estimated quantities, the advisory note should also allow for recalculation of the amount of compensation should quantities change; in this case the number of DESA (Design Equivalent Standard Axles). I suggest that the advisory note include the insertion “...and an increase in the payment described in Condition 7.13...” before “may be required”.
37. **Condition 7.13:** “Report on Final Standards.” As indicated by Mr Daysh in his statement, condition 7.13 is where there remained an outstanding issue relating to the calculation of the amount of compensation for early consumption of pavement life by construction traffic. The difference related to the design pavement life to be used in calculating the loss of life. The applicant proposed a 40 year design life. The approach preferred by the Councils was to use 25 years design life as set out in the Austroads Pavement Design Guide. Since the calculation of compensation recognises the net present value of the amount needed to fund earlier renewal, the discounting difference was significant. The technical debate on assessing the effects on consumption of remaining pavement life is hard to resolve, and the Councils and the applicant reached a compromise agreement. From the Councils’ perspectives the 25 year design life remains valid but the Councils were prepared to recognise the value of the likely improvement in the conditions of the road network within the construction zones and accept a reduced amount. Since the figures were reasonably well understood by those involved, the compromise was based on the average of the 40 year and 25 year assessments for each District. Both Councils and the applicant agreed that an appropriate time for payment was on completion of the works in each District. Since the amount is based on a pre-assessment of traffic loadings, it would be

appropriate to review the amounts if the heavy traffic loading increases beyond 15% as described in condition 7.12. The condition would be modified to:

- Clarify the different effects being addressed by amending “...on pavement and bridge condition....” to read “on the visible condition of pavements (*as distinguished from consumption of long term pavement life*) and the condition of bridges...”; and,
- Remove the description of the calculation and assumptions and insert the following:

“To recognise the project construction traffic’s consumption of long term pavement life the consent-holder shall also pay a contribution of \$99,000 to Franklin District Council” (or, as appropriate “\$328,500 to Waikato District Council”) “on completion of construction.”

38. **Condition 7.14:** “Disputes relating to financial contributions.” This approach is satisfactory. Since the calculation has been removed, it would be appropriate to modify the condition to refer to “*Disputes relating to Condition 7.13...*”

39. I also suggest that the following advisory note be included to supplement Conditions 7.13 and 7.14:

It is anticipated that pavement rehabilitation will be required on some sections of roads as a result of wind farm construction traffic loadings. Conditions set in 7.13 require the consent holder to either undertake these works or meet Council’s costs. The \$99,000 (or \$328,500 as appropriate) payment is to cover the gradual and unseen pavement deterioration on the roads used (i.e. the consumption of long term pavement life).

Conclusions

40. The applicant appears to have taken into account Waikato and Franklin District Councils' concerns regarding traffic effects and previous differences on some draft conditions have now been resolved. These would require modifications to the draft conditions as set out in the attached strikethrough version amended to include my suggestions (Attachment B).

41. With the suggested modifications, the draft conditions would resolve the FDC and WDC concerns relating to traffic.

Alasdair David Angus Gray

27 March 2009

<p>Waikato DC Traffic-related Conditions (Differences to Franklin Conditions highlighted)</p> <p>7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Franklin DC Traffic-related Conditions (Differences to Waikato Conditions highlighted)</p> <p>7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Statement Paragraph</p>	<p>Comments</p>
<p>7.1 The routes, vehicle types, traffic management and mitigation, and traffic generation of the wind farm shall be in general accordance with those described in the Traffic Design Group report, Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11).</p> <p>7.2 The consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare (in consultation with Waikato District Council Roading staff) and submit to Waikato District Council Roading Group Manager for approval three months prior to commencing each stage of the construction project a detailed Pavement, Bridge Rehabilitation and Maintenance Plan, covering the transport routes west of the Waikato River to be used for that stage. These routes are shown in the Traffic Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 9 for Stage 1, Figure 13 for Stage 2, and Figure 17 for Stage 3. The Maintenance Plans shall include the following matters:</p> <p>a) Details of the existing pavement condition including necessary photos and a video survey;</p> <p>b) Details of the existing condition of bridges, culverts, underground services, retaining structures, and any unstable slopes adjoining the road;</p> <p>c) A specific plan for each section of road including works to be undertaken before any use by wind farm construction traffic, maintenance to be undertaken during construction, and works to be undertaken once use of the route by wind farm construction traffic is complete;</p> <p>d) Minimum pavement conditions to be maintained, and a schedule of timeframes for repairs should ruts, potholes or other deficiencies form. The response times shall be no worse than the levels of service in relevant Waikato District Council road maintenance contracts;</p> <p>e) Measures to minimise the effects on houses along Pukerewa Road, Matira Road, Te Akau Coast Road and Te Akau South Road caused by dust arising from construction traffic, including the use of dust</p>	<p>7.1 The routes, vehicle types, traffic management and mitigation, and traffic generation of the wind farm shall be in general accordance with those described in the Traffic Design Group report, Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11).</p> <p>7.2 The consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare (in consultation with Franklin District Council Roading staff) and submit to Franklin District Council Roading Group Manager: Environmental Services for approval three months prior to commencing each stage of the construction project a detailed Pavement, Bridge Rehabilitation and Maintenance Plan, covering the transport routes west of the Waikato River to be used for that stage. These routes are shown in the Traffic Design Group report Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 9 for Stage 1, Figure 13 for Stage 2, and Figure 17 for Stage 3. The Maintenance Plans shall include the following matters:</p> <p>a) Details of the existing pavement condition including necessary photos and video surveys;</p> <p>b) Details of the existing condition of bridges, culverts, underground services, retaining structures, and any unstable slopes adjoining the road;</p> <p>c) A specific plan for each section of road including works to be undertaken before any use by wind farm construction traffic, maintenance to be undertaken during construction, and works to be undertaken once use of the route by wind farm construction traffic is complete;</p> <p>d) Minimum pavement conditions to be maintained, and a schedule of timeframes for repairs should ruts, potholes or other deficiencies form. The response times shall be no worse than the levels of service in relevant Franklin District Council road maintenance contracts;</p> <p>e) Measures to minimise the effects on houses along Port Waikato-Waikaretu Road caused by dust arising from construction traffic,</p>	<p>25</p>	<p>This condition is satisfactory. It defines nature and levels of traffic expected and that the assessment has been based upon. It should be read in conjunction with condition 7.12 defining a 15% change in volume as the level at which approval for changes is needed.</p>
<p>7.2 The consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare (in consultation with Waikato District Council Roading staff) and submit to Waikato District Council Roading Group Manager for approval three months prior to commencing each stage of the construction project a detailed Pavement, Bridge Rehabilitation and Maintenance Plan, covering the transport routes west of the Waikato River to be used for that stage. These routes are shown in the Traffic Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 9 for Stage 1, Figure 13 for Stage 2, and Figure 17 for Stage 3. 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The response times shall be no worse than the levels of service in relevant Waikato District Council road maintenance contracts;</p> <p>e) Measures to minimise the effects on houses along Pukerewa Road, Matira Road, Te Akau Coast Road and Te Akau South Road caused by dust arising from construction traffic, including the use of dust</p>	<p>7.2 The consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare (in consultation with Franklin District Council Roading staff) and submit to Franklin District Council Roading Group Manager: Environmental Services for approval three months prior to commencing each stage of the construction project a detailed Pavement, Bridge Rehabilitation and Maintenance Plan, covering the transport routes west of the Waikato River to be used for that stage. 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The response times shall be no worse than the levels of service in relevant Franklin District Council road maintenance contracts;</p> <p>e) Measures to minimise the effects on houses along Port Waikato-Waikaretu Road caused by dust arising from construction traffic,</p>	<p>26</p>	<p>The general approach and details of the plan are satisfactory when considered with the condition 7.13 objective to ensure that the net effect of the wind farm's construction on pavement and bridge condition is nil or better compared to the results of the surveys completed under condition 7.2 a) and b).</p> <p>Mr Galloway (paragraph 175) states that for roads outside the construction zones, the costs associated with strengthening in advance, or rehabilitating once damage is evident, will be borne by Contact Wind. Mr Galloway (paragraph 173) states that within the Construction Zones, these (monitoring, maintenance and renewal) should be at the full cost of Contact Wind, as the extent of pavement effects will almost solely be brought about by the construction traffic.</p> <p>The allocation of costs is not explicitly stated in the draft condition. It is clearly understood by Council and Contact staff and representatives that the full cost of road access is to be met by the consent-holder. Since the Pavement, Bridge Rehabilitation and Maintenance Plan is subject to the approval of Council staff, the risk of misunderstanding is low but it may be appropriate to be clear that all costs associated with the Pavement, Bridge Rehabilitation and Maintenance Plan are to be met by the consent-holder unless otherwise agreed by the relevant road controlling authority.</p> <p>In addition, there does not appear to be a condition to give effect to the plan.</p> <p>I suggest that Condition 7.2 be extended with an additional paragraph such as "At all times during the construction period, the consent holder shall comply with the approved Pavement, Bridge Rehabilitation and Maintenance Plan referred to in condition 7.2. All costs associated with the Pavement, Bridge Rehabilitation and Maintenance Plan are to be met by the consent-holder unless</p>

<p>Waikato DC Traffic-related Conditions (Differences to Franklin Conditions highlighted)</p> <p>7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Franklin DC Traffic-related Conditions (Differences to Waikato Conditions highlighted)</p> <p>7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Comments</p>
<p>suppressants or sealing past farmhouses;</p> <p>f) Consideration of other Council roading development intentions, such as seal extensions, with a view to incorporating them into the plan to maximise the outcome for all parties;</p> <p>g) Details of monitoring to be undertaken to determine any amendments needed to the Pavement, Bridge Rehabilitation and Maintenance Plans.</p>	<p>including the use of dust suppressants or sealing past farmhouses;</p> <p>f) Consideration of other Council roading development intentions, such as seal extensions, with a view to incorporating them into the plan to maximise the outcome for all parties;</p> <p>g) Details of monitoring to be undertaken to determine any amendments needed to the Pavement, Bridge Rehabilitation and Maintenance Plans.</p>	<p><i>otherwise agreed by the Franklin District Council (or, as appropriate Waikato District Council)."</i></p>
<p>7.3 The consent holder shall prepare a Construction Traffic Management Plan in consultation with Waikato District Council, and submit this Plan to the Waikato District Council Roding Group Manager for approval, one month prior to commencing the construction project. A working draft shall be submitted for Council comment two months prior to commencing the construction project. The Construction Traffic Management Plan is to include, but not be limited to, the following matters:</p> <p>a) To set out the nature and timing of the physical improvement works to the geometry and pavements of district roads required as a necessary adjunct to the wind farm project;</p> <p>b) To detail the intended traffic management arrangements (including times of traffic movements) and provisions for piloting during the delivery of over-weight and overdimensioned major components to the site, including copies of other statutory consents and approvals. The arrangements for the delivery of over-weight and overdimensioned major components to the site should avoid peak periods of traffic on the local and state highway networks and minimise as far as practicable disruption and disturbance to the residents;</p> <p>c) To manage construction traffic (other than component delivery) during the investigation and construction phase in accordance with the Transit NZ Code of Practice for Temporary Traffic Management and the Local Roads Supplement, including amongst other things details for the designation of specific Construction Zones, accesses from roads, and special traffic management arrangements on the following roads and any other Council roads directly affected by investigation and construction works:</p> <p>i) Te Akau Coast Road,</p>	<p>7.3 The consent holder shall prepare a Construction Traffic Management Plan in consultation with Franklin District Council, and submit this Plan to the Franklin District Council Group Manager: Environmental Services for approval, one month prior to commencing the construction project. A working draft shall be submitted for Council comment two months prior to commencing the construction project. The Construction Traffic Management Plan is to include, but not be limited to, the following matters:</p> <p>a) To set out the nature and timing of the physical improvement works to the geometry and pavements of district roads required as a necessary adjunct to the wind farm project;</p> <p>b) To detail the intended traffic management arrangements (including times of traffic movements) and provisions for piloting during the delivery of over-weight and overdimensioned major components to the site, including copies of other statutory consents and approvals. The arrangements for the delivery of over-weight and overdimensioned major components to the site should avoid peak periods of traffic on the local and state highway networks and minimise as far as practicable disruption and disturbance to the residents;</p> <p>c) To manage construction traffic (other than component delivery) during the investigation and construction phase in accordance with the Transit NZ Code of Practice for Temporary Traffic Management, including amongst other things details for the designation of specific Construction Zones, accesses from roads, and special traffic management arrangements on the following roads and any other Council roads directly affected by investigation and construction works:</p> <p>i) Port Waikato – Waikaretu Road,</p>	<p>27</p> <p>This is satisfactory and subject to the approval of the relevant road controlling authority. The Transit NZ Code of Practice for Temporary Traffic Management (and the Local Roads Supplement for WDC) is a highly prescriptive and nationally recognised guideline that sets out permitted equipment, methods, standards (e.g. maximum delays) and qualifications. This management plan approach has little risk of misunderstanding and is practical because the details for the duration and seasons of construction are not yet finalised. Although overweight and over-dimension loads are subject to a separate permit system it is appropriate for them to be managed as part of the overall traffic management plan.</p>

<p>Waikato DC Traffic-related Conditions (Differences to Franklin Conditions highlighted)</p> <p>7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Franklin DC Traffic-related Conditions (Differences to Waikato Conditions highlighted)</p> <p>7.0 TRAFFIC Traffic Management and Road Conditions</p>	Statement Paragraph	Comments
<p>ii) Te Akau South Road (to Neilson Road), iii) Pukerewa Road, and iv) Matira Road.</p> <p>d) To manage the movement of residents and other members of the public through the construction zones safely and with minimum delay, including the provision of gatehouses at either end of the Construction Zones continuously manned during periods when construction traffic is active and ensuring that the affected network is safe for use during all other times when there is no active temporary traffic management.</p> <p>e) To ensure the safety of school children either at school or travelling to and from school is not compromised, by including provision for communication between school buses and construction traffic, and the imposition of 40 km/h speed restrictions for construction traffic within 100m of the Te Akau school and when passing children cycling to or from Te Akau school.</p> <p>f) To establish other driver protocols including pulling over to let other traffic pass and managing traffic movement around regular and planned stock shifts;</p> <p>g) To provide affected residents, local authorities, NZ Transport Agency, schools, police , emergency services and other key stakeholders with prior notice of traffic arrangements (including when particular routes and access points will be used, and anticipated traffic flows), and to facilitate communication with the community, farmers and event organisers.</p> <p>h) To minimise contractor vehicle movements to and from the site, by adopting shared travel, return waste carriage, and other vehicle number minimisation techniques.</p> <p>i) To manage construction traffic at entrance/exit points on public roads.</p> <p>7.4 At all times during the construction period, the consent holder shall comply with the approved Construction Traffic Management Plan referred to in condition 7.3.</p>	<p>ii) Waikaretu Valley Road, and iii) Pukerewa Road;</p> <p>d) To manage the movement of residents and other members of the public through the construction zones safely and with minimum delay, including the provision of gatehouses at either end of the Construction Zones continuously manned during periods when construction traffic is active and ensuring that the affected network is safe for use during all other times when there is no active temporary traffic management;</p> <p>e) To ensure the safety of school children either at school or travelling to and from school is not compromised, by including provision for communication between school buses and construction traffic, and the imposition of 40 km/h speed restrictions for construction traffic within 100m of the Waikaretu and Te Puaha schools, and when passing children cycling to or from these schools;</p> <p>f) To establish other driver protocols including pulling over to let other traffic pass and managing traffic movement around regular and planned stock shifts;</p> <p>g) To provide affected residents, local authorities, NZ Transport Agency, schools, police , emergency services and other key stakeholders with prior notice of traffic arrangements (including when particular routes and access points will be used, and anticipated traffic flows), and to facilitate communication with the community, farmers and event organisers;</p> <p>h) To minimise contractor vehicle movements to and from the site, by adopting shared travel, return waste carriage, and other vehicle number minimisation techniques;</p> <p>i) To manage construction traffic at entrance/exit points on public roads.</p> <p>7.4 At all times during the construction period, the consent holder shall comply with the approved Construction Traffic Management Plan referred to in condition 7.3.</p>	28	This gives effect to the construction traffic management plan and is appropriate.

<p>Waikato DC Traffic-related Conditions (Differences to Franklin Conditions highlighted) 7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Franklin DC Traffic-related Conditions (Differences to Waikato Conditions highlighted) 7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Statement Paragraph</p>	<p>Comments</p>
<p>7.5 The consent holder shall prepare and submit to Waikato District Council Roading Group Manager for approval the detailed designs for site accesses at public roads one month prior to commencing construction of each stage.</p>	<p>7.5 The consent holder shall prepare and submit to Franklin District Council Group Manager: Environmental Services for approval the detailed designs for site accesses at public roads one month prior to commencing construction of each stage.</p>	<p>29</p>	<p>The locations of the accesses are fixed in the application and drawings attached to the conditions. The accessways are subject to the approval of the relevant authority and are expected to comply with the relevant Council engineering standards except that they will be wider to accommodate over-dimension loads.</p>
<p>7.6 The consent holder shall install edgelines and edgemarkers posts, in accordance the Manual of Traffic Signs and Markings, along the full length of Hetherington Road prior to commencing construction of Stage 1, and Te Akau and Rotowaro Roads, before commencing construction of Stage 2.</p>	<p>7.6 The consent holder shall install edgelines and edgemarkers posts, in accordance the Manual of Traffic Signs and Markings, along the full length of Tuakau Bridge – Port Waikato Road and Waikaretu Valley Road, prior to commencing construction of Stage 1.</p>	<p>30</p>	<p>This provides a safety improvement for the relevant roads approaching the site. It does result in a minor maintenance burden for the Councils but they can choose whether to maintain or continue the delineation.</p>
<p>7.7 The consent holder shall construct public viewing areas and associated signage prior to commencing each stage of construction and maintain them for the duration of consent as detailed in the Traffic Design Group report Hau uru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 20.</p>	<p>7.7 The consent holder shall construct public viewing areas and associated signage prior to commencing each stage of construction and maintain them for the duration of consent as detailed in the Traffic Design Group report Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 20.</p>	<p>31</p>	<p>This is satisfactory. Monitoring (Condition 7.11) should include visitor traffic and the review condition provides the opportunity for Councils to respond to higher than expected numbers of visitors prior to the end of construction.</p>
<p>7.8 The consent holder shall prepare and submit to Waikato District Council Roading Group Manager for approval: a) Design standards to be used for measures affecting formed public roads and temporary or permanent mitigation, three months prior to undertaking any road improvement; b) Detailed design for each temporary or permanent road improvement measures affecting public roads shall be submitted for approval one month prior to undertaking that road improvement. Detailed design shall include the proposed permanent arrangements and how these will be achieved.</p>	<p>7.8 The consent holder shall prepare and submit to Franklin District Council Group Manager: Environmental Services for approval: a) Design standards to be used for measures affecting formed public roads and temporary or permanent mitigation, three months prior to undertaking any road improvements; b) Detailed design for each temporary or permanent road improvement measures affecting public roads shall be submitted for approval one month prior to undertaking that road improvement. Detailed design shall include the proposed permanent arrangements and how these will be achieved.</p>	<p>32</p>	<p>This is appropriate, with proposals subject to the approval of the relevant authority.</p>
<p>7.9 The consent holder shall communicate with the Te Akau School to ensure that conflict is minimised between programmed normal school events, school bus movements, and traffic movements associated with the wind farm construction.</p>	<p>7.9 The consent holder shall communicate with Waikaretu and Te Puaha Schools to ensure that conflict is minimised between programmed normal school events, school bus movements, and traffic movements associated with the wind farm construction.</p>	<p>33</p>	<p>This is appropriate and would have been expected as part of an effective traffic and construction management plan.</p>
<p>7.10 During the construction period, access shall continue to be provided to and from individual properties, and for traffic travelling along the route through the Waikato District to the site, to a temporary</p>	<p>7.10 During the construction period, access shall continue to be provided to and from individual properties, and for traffic travelling along the route through the Franklin District to the site, to a temporary</p>	<p>34</p>	<p>This appears appropriate if clarification was necessary. Operating sections of road as Construction Zones does not affect access rights. The condition refers to temporary standards. From the Councils'</p>

Waikato DC Traffic-related Conditions (Differences to Franklin Conditions highlighted) 7.0 TRAFFIC Traffic Management and Road Conditions	Franklin DC Traffic-related Conditions (Differences to Waikato Conditions highlighted) 7.0 TRAFFIC Traffic Management and Road Conditions	Comments
<p>standard acceptable to Waikato District Council Roading Group Manager.</p> <p><i>Advisory Note:</i></p> <p><i>The purpose of this condition is to ensure that construction traffic does not adversely impact on accessibility of local access provisions. It does not commit any party to upgrading of existing access provisions other than as specifically required by other conditions of this consent.</i></p>	<p>standard acceptable to Franklin Council Group Manager.</p> <p><i>Advisory Note:</i></p> <p><i>The purpose of this condition is to ensure that construction traffic does not adversely impact on accessibility of local access provisions. It does not commit any party to upgrading of existing access provisions other than as specifically required by other conditions of this District consent.</i></p>	<p>perspectives, the long duration of the project means that temporary standards would only apply when localised short duration works were being completed that directly affected the road corridor.</p>
<p>7.11 The consent holder shall monitor, on a weekly basis during construction of the project, and keep records of:</p> <p>a) The effectiveness of the temporary traffic management measures on the affected parts of Te Akau Coast Road, Te Akau South Road (to the southernmost area of the wind farm), Pukerewa Road and Matira Road and any other Council roads directly affected by the works;</p> <p>b) Queues and delays from oversize transport, and changes to the timing or management of the journeys implemented if needed to avoid excessive queues;</p> <p>c) The road conditions on the transport routes described in condition 7.2 which are being used by project heavy vehicles at that time;</p> <p>d) All project-related heavy vehicle movements.</p> <p>The consent holder shall report on a monthly basis to the Waikato District Council Roading Group Manager for the duration of the construction period, or as otherwise requested by the Council Roading Group Manager, on any deficiencies, concerns, improvements or alterations proposed based on the weekly monitoring undertaken under this condition. Any specific maintenance works identified as being necessary as a result of the effects of construction traffic during the project construction period shall be carried out by the consent holder or at the consent holder's cost, or as otherwise agreed with the Waikato District Council Roading Group Manager.</p>	<p>35</p> <p>7.11 The consent holder shall monitor, on a weekly basis during construction of the project, and keep records of:</p> <p>a) The effectiveness of the temporary traffic management measures on the affected parts of Port Waikato – Waikaretu Road, Waikaretu Valley Road, Pukerewa Road and any other Council roads directly affected by the works;</p> <p>b) Queues and delays from oversize transport, and changes to the timing or management of the journeys implemented if needed to avoid excessive queues;</p> <p>c) The road conditions on the transport routes described in condition 7.2 which are being used by project heavy vehicles at that time;</p> <p>d) All project-related heavy vehicle movements.</p> <p>The consent holder shall report on a monthly basis to the Franklin District Council Group Manager: Environmental Services for the duration of the construction period, or as otherwise requested by the Franklin District Council Group Manager: Environmental Services, on any deficiencies, concerns, improvements or alterations proposed based on the weekly monitoring undertaken under this condition. Any specific maintenance works identified as being necessary as a result of the effects of construction traffic during the project construction period shall be carried out by the consent holder or at the consent holder's cost, or as otherwise agreed with the Franklin District Council Group Manager: Environmental Services.</p>	<p>This appears appropriate. It would also be useful to monitor visitor numbers to ensure that they are as anticipated. This could be by recording the number of visitor vehicles at the manned gatehouses. I suggest inserting 7.11 (e) "Visitors entering the site to view the wind farm".</p>
<p>7.12 No materials over 15% in excess of the quantity estimated to be transported by road in the application is to be transported via local roads, without prior written approval of the Waikato District Council Roading Group Manager.</p> <p><i>Advisory Note:</i></p>	<p>36</p> <p>7.12 No materials over 15% in excess of the quantity estimated to be transported by road in the application is to be transported via local roads, without prior written approval of the Franklin District Council Group Manager: Environmental Services.</p> <p><i>Advisory Note:</i></p>	<p>This provides some flexibility for the consent-holder to alter materials or methods without being considered a significant increase, and protects the road controlling authorities from route changes or significant changes in methodology such as aggregate sourcing, water sourcing or the location of batching plants. It may</p>

<p>Waikato DC Traffic-related Conditions (Differences to Franklin Conditions highlighted)</p> <p>7.0 TRAFFIC Traffic Management and Road Conditions</p> <p><i>The underlying assumption of the application is that all aggregate for construction use is to be sourced from the Whitford Quarry. Amendments to the Pavement, Bridge Rehabilitation and Maintenance Plans may be required if circumstances change and the impacts on the roading infrastructure are greater than anticipated.</i></p>	<p>Franklin DC Traffic-related Conditions (Differences to Waikato Conditions highlighted)</p> <p>7.0 TRAFFIC Traffic Management and Road Conditions</p> <p><i>The underlying assumption of the application is that all aggregate for construction use is to be sourced from the Whitford Quarry. Amendments to the Pavement, Bridge Rehabilitation and Maintenance Plans may be required if circumstances change and the impacts on the roading infrastructure are greater than anticipated.</i></p>	<p>Statement Paragraph</p>	<p>Comments</p>
<p>7.13 Within two months of completion of construction of Stages 1 and 3 (on the basis that Stage 2 routes are also used for Stage 3), the consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare and submit to Waikato District Council Reading Group Manager for consideration, feedback and final approval, a report on the final standard of the pavement and structures on that route. The review shall recommend any further works or cash contributions that are necessary to ensure that the net effect of the wind farm's construction on pavement and bridge condition is nil or better compared to the results of the surveys completed under condition 7.2 a) and b). The review shall also include a calculation of the value of the cash contribution to be paid to cover the Waikato District Council's costs (excluding the New Zealand Transport Agency's contribution) associated with consumption of pavement life on Te Akau Road, Highway 22, Waingarua Road, Rotowaro Road, Tainui Bridge Road, Hetherington Road, and Te Ohaaki Road.</p> <p>The calculation shall be based on the following assumptions and inputs:</p> <ul style="list-style-type: none"> i) Design in accordance with the Austroads Pavement Design Guide ii) Current average daily traffic flows iii) A 40 year design life, iv) An average 50% of pavement life consumed, v) \$350,000/km pavement rehabilitation cost, vi) A 10% discounting rate, and 	<p>7.13 Within two months of completion of construction of Stages 1 and 3 (on the basis that the Stage 2 routes are also used for Stage 3), the consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare and submit to Franklin District Council Group Manager: Environmental Services for consideration, feedback and final approval, a report on the final standard of the pavements and structures on that route. The review shall recommend any further works or cash contributions that are necessary to ensure that the net effect of the wind farm's construction on pavement and bridge condition is nil or better compared to the results of the surveys completed under condition 7.2 a) and b). The review shall also include a calculation of the value of the cash contribution to be paid to cover the Franklin District Council's costs (excluding the New Zealand Transport Agency's contribution) associated with consumption of pavement life on Port Waikato - Waikaretu Road (as far south as the Block A access), Tuakau Bridge - Port Waikato Road, Highway 22, Glen Murray Road, Pukekawa-Churchill Road and Waikaretu Valley Road,</p> <p>The calculation shall be based on the following assumptions and inputs:</p> <ul style="list-style-type: none"> i) Design in accordance with the Austroads Pavement Design Guide ii) Current average daily traffic flows iii) A 40 year design life, iv) An average 50% of pavement life consumed, v) \$350,000/km pavement rehabilitation cost, vi) A 10% discounting rate, and 	<p>37</p>	<p>be appropriate to define the quantities as they are described in the application and would be measured (by volume, vehicle numbers and Equivalent Standard Axles). Since the compensation in 7.13 is now pre-calculated based on the estimated quantities, the advisory note should also allow for recalculation of the amount of compensation should quantities change; in this case the number of DESA (Design Equivalent Standard Axles).</p> <p>I suggest that the advisory note include the insertion "...and an increase in the payment described in Condition 7.13..." before "may be required".</p> <p>As indicated by Mr Daysh in his statement, condition 7.13 is where there remained an outstanding issue relating to the calculation of the amount of compensation for early consumption of pavement life by construction traffic. The difference related to the design pavement life to be used in calculating the loss of life. The applicant proposed a 40 year design life. The approach preferred by the Councils was to use 25 years design life as set out in the Austroads Pavement Design Guide. Since the calculation of compensation recognises the net present value of the amount needed to fund earlier renewal, the discounting difference was significant. The technical debate on assessing the effects on consumption of remaining pavement life is hard to resolve, and the Councils and the applicant reached a compromise agreement. From the Councils' perspectives the 25 year design life remains valid but the Councils were prepared to recognise the value of the likely improvement in the conditions of the road network within the construction zones and accept a reduced amount. Since the figures were reasonably well understood by those involved, the compromise was based on the average of the 40 year and 25 year assessments for each District. Both Councils and the applicant agreed that an appropriate time for payment was on completion of the works in each District. Since the amount is based on a pre-assessment of traffic loadings, it would be appropriate to review the amounts if the heavy traffic loading increases beyond 15% as described in condition 7.12. The condition would be modified to:</p> <ul style="list-style-type: none"> • Clarify the different effects being addressed by amending "...on pavement and bridge condition..." to read "on the visible condition of pavements (as distinguished from

<p>Waikato DC Traffic-related Conditions (Differences to Franklin Conditions highlighted) 7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Franklin DC Traffic-related Conditions (Differences to Waikato Conditions highlighted) 7.0 TRAFFIC Traffic Management and Road Conditions</p>	<p>Statement Paragraph</p>	<p>Comments</p>
<p>vii) A 10% finance rate The consent holder shall pay the cash contribution and/or implement any further works as approved in the final route reports.</p>	<p>vii) A 10% finance rate The consent holder shall pay the cash contribution and/or implement any further works as approved in the final route reports.</p>		<p><i>consumption of long term pavement life) and the condition of bridges..."; and,</i></p> <ul style="list-style-type: none"> Remove the description of the calculation and assumptions and insert the following: <i>"To recognise the project construction traffic's consumption of long term pavement life the consent-holder shall also pay a contribution of \$99,000 to Franklin District Council" (or, as appropriate "\$328,500 to Waikato District Council") "on completion of construction."</i>
<p>7.14 Any disputes arising in relation to calculation of the financial contributions in condition 7.13 shall be referred to an Independent Chartered Professional Engineer appointed by the President of the Institution of Professional Engineers New Zealand for a binding decision.</p>	<p>7.14 Any disputes arising in relation to calculation of the financial contributions in condition 7.13 shall be referred to an Independent Chartered Professional Engineer appointed by the President of the Institution of Professional Engineers New Zealand for a binding decision.</p>	<p>38</p>	<p>This approach is satisfactory. Since the calculation has been removed, it would be appropriate to modify the condition to refer to "Disputes relating to Condition 7.13..."</p>
		<p>39</p>	<p>I also suggest that the following advisory note be included to supplement Conditions 7.13 and 7.14: <i>It is anticipated that pavement rehabilitation will be required on some sections of roads as a result of wind farm construction traffic loadings. Conditions set in 7.13 require the consent holder to either undertake these works or meet Council's costs. The \$99,000 (or \$328,500 as appropriate) payment is to cover the gradual and unseen pavement deterioration on the roads used (i.e. the consumption of long term pavement life).</i></p>

Attachment B:

Strikethrough version of Draft Conditions incorporating Alasdair Gray's Suggestions for Modification - To be completed

<p>Text inserted shown <u>underlined</u> and <u>highlighted grey</u>.</p> <p>Text deleted shown strikethrough and highlighted grey.</p> <p>Waikato District Council</p> <p>7.0 TRAFFIC</p> <p>Traffic Management and Road Conditions</p> <p>7.1 The routes, vehicle types, traffic management and mitigation, and traffic generation of the wind farm shall be in general accordance with those described in the Traffic Design Group report, Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11).</p> <p>7.2 The consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare (in consultation with Waikato District Council Roading staff) and submit to Waikato District Council Roading Group Manager for approval three months prior to commencing each stage of the construction project a detailed Pavement, Bridge Rehabilitation and Maintenance Plan, covering the transport routes west of the Waikato River to be used for that stage. These routes are shown in the Traffic Design Group report Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 9 for Stage 1, Figure 13 for Stage 2, and Figure 17 for Stage 3. The Pavement, Bridge Rehabilitation and Maintenance Plans shall include the following matters:</p> <ol style="list-style-type: none"> Details of the existing pavement condition including necessary photos and a video survey; Details of the existing condition of bridges, culverts, underground services, retaining structures, and any unstable slopes adjoining the road; A specific plan for each section of road including works to be undertaken before any use by wind farm construction traffic, maintenance to be undertaken during construction, and works to be undertaken once use of the route by wind farm construction traffic is complete; Minimum pavement conditions to be maintained, and a schedule of timeframes for repairs should ruts, potholes or other deficiencies form. The response times shall be no worse than the levels of service in relevant Waikato District Council road maintenance contracts; Measures to minimise the effects on houses along Pukerewa Road, Matira Road, Te Akau Coast Road and Te Akau South Road caused by dust arising from construction traffic, including the use of dust suppressants or sealing past farmhouses; Consideration of other Council roading development intentions, such as seal extensions, with a view to incorporating them into the plan to maximise the outcome 	<p>Text inserted shown <u>underlined</u> and <u>highlighted grey</u>.</p> <p>Text deleted shown strikethrough and highlighted grey.</p> <p>Franklin District Council</p> <p>7.0 TRAFFIC</p> <p>Traffic Management and Road Conditions</p> <p>7.1 The routes, vehicle types, traffic management and mitigation, and traffic generation of the wind farm shall be in general accordance with those described in the Traffic Design Group report, Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11).</p> <p>7.2 The consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare (in consultation with Franklin District Council Roading staff) and submit to Franklin District Council Group Manager: Environmental Services for approval three months prior to commencing each stage of the construction project a detailed Pavement, Bridge Rehabilitation and Maintenance Plan, covering the transport routes west of the Waikato River to be used for that stage. These routes are shown in the Traffic Design Group report Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 9 for Stage 1, Figure 13 for Stage 2, and Figure 17 for Stage 3. The Pavement, Bridge Rehabilitation and Maintenance Plans shall include the following matters:</p> <ol style="list-style-type: none"> Details of the existing pavement condition including necessary photos and video surveys; Details of the existing condition of bridges, culverts, underground services, retaining structures, and any unstable slopes adjoining the road; A specific plan for each section of road including works to be undertaken before any use by wind farm construction traffic, maintenance to be undertaken during construction, and works to be undertaken once use of the route by wind farm construction traffic is complete; Minimum pavement conditions to be maintained, and a schedule of timeframes for repairs should ruts, potholes or other deficiencies form. The response times shall be no worse than the levels of service in relevant Franklin District Council road maintenance contracts; Measures to minimise the effects on houses along Port Waikato-Waikaretu Road caused by dust arising from construction traffic, including the use of dust suppressants or sealing past farmhouses; Consideration of other Council roading development intentions, such as seal
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for all parties:

- g) Details of monitoring to be undertaken to determine any amendments needed to the Pavement, Bridge Rehabilitation and Maintenance Plans.

At all times during the construction period, the consent holder shall comply with the approved Pavement, Bridge Rehabilitation and Maintenance Plan referred to in condition 7.2. All costs associated with the Pavement, Bridge Rehabilitation and Maintenance Plan are to be met by the consent-holder unless otherwise agreed by the Waikato District Council.

7.3

The consent holder shall prepare a **Construction Traffic Management Plan** in consultation with Waikato District Council, and submit this Plan to the Waikato District Council Roading Group Manager for approval, one month prior to commencing the construction project. A working draft shall be submitted for Council comment two months prior to commencing the construction project. The Construction Traffic Management Plan is to include, but not be limited to, the following matters:

- a) To set out the nature and timing of the physical improvement works to the geometry and pavements of district roads required as a necessary adjunct to the wind farm project;
- b) To detail the intended traffic management arrangements (including times of traffic movements) and provisions for piloting during the delivery of over-weight and over-dimensioned major components to the site, including copies of other statutory consents and approvals. The arrangements for the delivery of over-weight and over-dimensioned major components to the site should avoid peak periods of traffic on the local and state highway networks and minimise as far as practicable disruption and disturbance to the residents;
- c) To manage construction traffic (other than component delivery) during the investigation and construction phase in accordance with the Transit NZ Code of Practice for Temporary Traffic Management and the Local Roads Supplement, including amongst other things details for the designation of specific Construction Zones, accesses from roads, and special traffic management arrangements on the following roads and any other Council roads directly affected by investigation and construction works:

- i) Te Akau Coast Road,
- ii) Te Akau South Road (to Neilson Road),
- iii) Pukerewa Road, and
- iv) Matira Road.

- d) To manage the movement of residents and other members of the public through the construction zones safely and with minimum delay, including the provision of gatehouses at either end of the Construction Zones continuously manned during periods when construction traffic is active and ensuring that the affected network is safe for use during all other times when there is no active temporary traffic management.

- e) To ensure the safety of school children either at school or travelling to and from school is not compromised, by including provision for communication between school buses and construction traffic, and the imposition of 40 km/h speed restrictions for construction traffic within 100m of the Te Akau school and when

extensions, with a view to incorporating them into the plan to maximise the outcome for all parties:

- g) Details of monitoring to be undertaken to determine any amendments needed to the Pavement, Bridge Rehabilitation and Maintenance Plans.

At all times during the construction period, the consent holder shall comply with the approved Pavement, Bridge Rehabilitation and Maintenance Plan referred to in condition 7.2. All costs associated with the Pavement, Bridge Rehabilitation and Maintenance Plan are to be met by the consent-holder unless otherwise agreed by the Franklin District Council.

7.3

The consent holder shall prepare a **Construction Traffic Management Plan** in consultation with Franklin District Council, and submit this Plan to the Franklin District Council Group Manager: Environmental Services for approval, one month prior to commencing the construction project. A working draft shall be submitted for Council comment two months prior to commencing the construction project. The Construction Traffic Management Plan is to include, but not be limited to, the following matters:

- a) To set out the nature and timing of the physical improvement works to the geometry and pavements of district roads required as a necessary adjunct to the wind farm project;
- b) To detail the intended traffic management arrangements (including times of traffic movements) and provisions for piloting during the delivery of over-weight and over-dimensioned major components to the site, including copies of other statutory consents and approvals. The arrangements for the delivery of over-weight and over-dimensioned major components to the site should avoid peak periods of traffic on the local and state highway networks and minimise as far as practicable disruption and disturbance to the residents;
- c) To manage construction traffic (other than component delivery) during the investigation and construction phase in accordance with the Transit NZ Code of Practice for Temporary Traffic Management, including amongst other things details for the designation of specific Construction Zones, accesses from roads, and special traffic management arrangements on the following roads and any other Council roads directly affected by investigation and construction works:

- i) Port Waikato – Waikaretu Road,
- ii) Waikaretu Valley Road, and
- iii) Pukerewa Road;

- d) To manage the movement of residents and other members of the public through the construction zones safely and with minimum delay, including the provision of gatehouses at either end of the Construction Zones continuously manned during periods when construction traffic is active and ensuring that the affected network is safe for use during all other times when there is no active temporary traffic management;

- e) To ensure the safety of school children either at school or travelling to and from school is not compromised, by including provision for communication between

<p>passing children cycling to or from Te Akau school.</p> <p>f) To establish other driver protocols including pulling over to let other traffic pass and managing traffic movement around regular and planned stock shifts;</p> <p>g) To provide affected residents, local authorities, NZ Transport Agency, schools, police, emergency services and other key stakeholders with prior notice of traffic arrangements (including when particular routes and access points will be used, and anticipated traffic flows), and to facilitate communication with the community, farmers and event organisers.</p> <p>h) To minimise contractor vehicle movements to and from the site, by adopting shared travel, return waste carriage, and other vehicle number minimisation techniques.</p> <p>i) To manage construction traffic at entrance/exit points on public roads.</p> <p>7.4 At all times during the construction period, the consent holder shall comply with the approved Construction Traffic Management Plan referred to in condition 7.3.</p> <p>7.5 The consent holder shall prepare and submit to Waikato District Council Roading Group Manager for approval the detailed designs for site accesses at public roads one month prior to commencing construction of each stage.</p> <p>7.6 The consent holder shall install edgelines and edgemarkers posts, in accordance the Manual of Traffic Signs and Markings, along the full length of Hetherington Road prior to commencing construction of Stage 1, and Te Akau and Rotowaro Roads, before commencing construction of Stage 2.</p> <p>7.7 The consent holder shall construct public viewing areas and associated signage prior to commencing each stage of construction and maintain them for the duration of consent as detailed in the Traffic Design Group report Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 20.</p> <p>7.8 The consent holder shall prepare and submit to Waikato District Council Roading Group Manager for approval:</p> <p>a) Design standards to be used for measures affecting formed public roads and temporary or permanent mitigation, three months prior to undertaking any road improvement;</p> <p>b) Detailed design for each temporary or permanent road improvement measures affecting public roads shall be submitted for approval one month prior to undertaking that road improvement. Detailed design shall include the proposed permanent arrangements and how these will be achieved.</p> <p>7.9 The consent holder shall communicate with the Te Akau School to ensure that conflict is minimised between programmed normal school events, school bus movements, and traffic movements associated with the wind farm construction.</p> <p>7.10 During the construction period, access shall continue to be provided to and from individual properties, and for traffic travelling along the route through the Waikato District Council Roading Group Manager.</p>	<p>school buses and construction traffic, and the imposition of 40 km/h speed restrictions for construction traffic within 100m of the Waikaretu and Te Puaha schools, and when passing children cycling to or from these schools;</p> <p>f) To establish other driver protocols including pulling over to let other traffic pass and managing traffic movement around regular and planned stock shifts;</p> <p>g) To provide affected residents, local authorities, NZ Transport Agency, schools, police, emergency services and other key stakeholders with prior notice of traffic arrangements (including when particular routes and access points will be used, and anticipated traffic flows), and to facilitate communication with the community, farmers and event organisers;</p> <p>h) To minimise contractor vehicle movements to and from the site, by adopting shared travel, return waste carriage, and other vehicle number minimisation techniques;</p> <p>i) To manage construction traffic at entrance/exit points on public roads.</p> <p>7.4 At all times during the construction period, the consent holder shall comply with the approved Construction Traffic Management Plan referred to in condition 7.3.</p> <p>7.5 The consent holder shall prepare and submit to Franklin District Council Group Manager: Environmental Services for approval the detailed designs for site accesses at public roads one month prior to commencing construction of each stage.</p> <p>7.6 The consent holder shall install edgelines and edgemarkers posts, in accordance the Manual of Traffic Signs and Markings, along the full length of Tuakau Bridge – Port Waikato Road and Waikaretu Valley Road, prior to commencing construction of Stage 1.</p> <p>7.7 The consent holder shall construct public viewing areas and associated signage prior to commencing each stage of construction and maintain them for the duration of consent as detailed in the Traffic Design Group report Hauauru Ma raki – Waikato Wind Farm: Transportation Assessment, dated June 2008 (Report T11) as Figure 20.</p> <p>7.8 The consent holder shall prepare and submit to Franklin District Council Group Manager: Environmental Services for approval:</p> <p>a) Design standards to be used for measures affecting formed public roads and temporary or permanent mitigation, three months prior to undertaking any road improvements;</p> <p>b) Detailed design for each temporary or permanent road improvement measures affecting public roads shall be submitted for approval one month prior to undertaking that road improvement. Detailed design shall include the proposed permanent arrangements and how these will be achieved.</p> <p>7.9 The consent holder shall communicate with Waikaretu and Te Puaha Schools to ensure that conflict is minimised between programmed normal school events, school bus movements, and traffic movements associated with the wind farm construction.</p> <p>7.10 During the construction period, access shall continue to be provided to and from individual properties, and for traffic travelling along the route through the Franklin District Council Group Manager.</p>
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<p>Advisory Note:</p> <p>The purpose of this condition is to ensure that construction traffic does not adversely impact on accessibility of local access provisions. It does not commit any party to upgrading of existing access provisions other than as specifically required by other conditions of this consent.</p> <p>7.11 The consent holder shall monitor, on a weekly basis during construction of the project, and keep records of:</p> <ol style="list-style-type: none"> The effectiveness of the temporary traffic management measures on the affected parts of Te Akau Coast Road, Te Akau South Road (to the southernmost area of the wind farm), Pukerewa Road and Mafira Road and any other Council roads directly affected by the works; Queues and delays from oversize transport, and changes to the timing or management of the journeys implemented if needed to avoid excessive queues; The road conditions on the transport routes described in condition 7.2 which are being used by project heavy vehicles at that time; All project-related heavy vehicle movements; <u>Visitors entering the site to view the wind farm.</u> <p>The consent holder shall report on a monthly basis to the Waikato District Council Roading Group Manager for the duration of the construction period, or as otherwise requested by the Waikato District Council Roading Group Manager, on any deficiencies, concerns, improvements or alterations proposed based on the weekly monitoring undertaken under this condition. Any specific maintenance works identified as being necessary as a result of the effects of construction traffic during the project construction period shall be carried out by the consent holder or at the consent holder's cost, or as otherwise agreed with the Waikato District Council Roading Group Manager.</p> <p>7.12 No materials over 15% in excess of the quantity estimated to be transported by road in the application is to be transported via local roads, without prior written approval of the Waikato District Council Roading Group Manager.</p> <p>Advisory Note:</p> <p>The underlying assumption of the application is that all aggregate for construction use is to be sourced from the Whitford Quarry. Amendments to the Pavement, Bridge Rehabilitation and Maintenance Plans and an increase in the payment described in Condition 7.13 may be required if circumstances change and the impacts on the roading infrastructure are greater than anticipated.</p> <p>7.13 Within two months of completion of construction of Stages 1 and 3 (on the basis that Stage 2 routes are also used for Stage 3), the consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare and submit to Waikato District Council Roading Group Manager for consideration, feedback and final approval, a report on the final standard of the pavement and structures on that route. The review shall recommend any further works or cash contributions that are necessary to</p>	<p>Manager: Environmental Services.</p> <p>Advisory Note:</p> <p>The purpose of this condition is to ensure that construction traffic does not adversely impact on accessibility of local access provisions. It does not commit any party to upgrading of existing access provisions other than as specifically required by other conditions of this consent.</p> <p>7.11 The consent holder shall monitor, on a weekly basis during construction of the project, and keep records of:</p> <ol style="list-style-type: none"> The effectiveness of the temporary traffic management measures on the affected parts of Port Waikato – Waikareiu Road, Waikareiu Valley Road, Pukerewa Road and any other Council roads directly affected by the works; Queues and delays from oversize transport, and changes to the timing or management of the journeys implemented if needed to avoid excessive queues; The road conditions on the transport routes described in condition 7.2 which are being used by project heavy vehicles at that time; All project-related heavy vehicle movements; <u>Visitors entering the site to view the wind farm.</u> <p>The consent holder shall report on a monthly basis to the Franklin District Council Group Manager: Environmental Services for the duration of the construction period, or as otherwise requested by the Franklin District Council Group Manager: Environmental Services, on any deficiencies, concerns, improvements or alterations proposed based on the weekly monitoring undertaken under this condition. Any specific maintenance works identified as being necessary as a result of the effects of construction traffic during the project construction period shall be carried out by the consent holder or at the consent holder's cost, or as otherwise agreed with the Franklin District Council Group Manager: Environmental Services.</p> <p>7.12 No materials over 15% in excess of the quantity estimated to be transported by road in the application is to be transported via local roads, without prior written approval of the Franklin District Council Group Manager: Environmental Services.</p> <p>Advisory Note:</p> <p>The underlying assumption of the application is that all aggregate for construction use is to be sourced from the Whitford Quarry. Amendments to the Pavement, Bridge Rehabilitation and Maintenance Plans and an increase in the payment described in Condition 7.13 may be required if circumstances change and the impacts on the roading infrastructure are greater than anticipated.</p> <p>7.13 Within two months of completion of construction of Stages 1 and 3 (on the basis that the Stage 2 routes are also used for Stage 3), the consent holder shall have an appropriately qualified and experienced Chartered Professional Engineer prepare and submit to Franklin District Council Group Manager: Environmental Services for consideration, feedback and final approval, a report on the final standard of the pavements and structures on that</p>
<p>Contact HRM Wind Farm, Pavements Evidence, Gray Issue 1</p>	<p>B.4</p>

ensure that the net effect of the wind farm's construction on the visible condition of pavements (as distinguished from consumption of long term pavement life) and the condition of bridges condition is nil or better compared to the results of the surveys completed under condition 7.2 a) and b).

The review shall also include a calculation of the value of the cash contribution to be paid to cover the Waikato District Council's costs (excluding the New Zealand Transport Agency's contribution) associated with consumption of pavement life on Te Akau Road, Highway 22, Weingere Road, Retowaro Road, Tainui Bridge Road, Hetherington Road, and Te Ohaaki Road.

The calculation shall be based on the following assumptions and inputs:

- i) Design in accordance with the Austroads Pavement Design Guide
- ii) Current average daily traffic flows
- iii) A 40 year design life,
- iv) An average 50% of pavement life consumed,
- v) \$350,000/km pavement rehabilitation cost,
- vi) A 10% discounting rate, and
- vii) A 10% finance rate

The consent holder shall pay the cash contribution and/or implement any further works as approved in the final route reports.

To recognise the project construction traffic's consumption of long term pavement life the consent holder shall also pay a contribution of \$328,500 to Waikato District Council on completion of construction.

7.14 Any disputes arising in relation to calculation of the financial contributions in condition 7.13 shall be referred to an Independent Chartered Professional Engineer appointed by the President of the Institution of Professional Engineers New Zealand for a binding decision.

Advisory note:

It is anticipated that pavement rehabilitation will be required on some sections of roads as a result of wind farm construction traffic loadings. Conditions set in 7.13 require the consent holder to either undertake these works or meet Council's costs. The \$328,500 payment is to cover the gradual and unseen pavement deterioration on the roads used (i.e. the consumption of long term pavement life).

The review shall recommend any further works or cash contributions that are necessary to ensure that the net effect of the wind farm's construction on the visible condition of pavements (as distinguished from consumption of long term pavement life) and the condition of bridges condition is nil or better compared to the results of the surveys completed under condition 7.2 a) and b).

The review shall also include a calculation of the value of the cash contribution to be paid to cover the Franklin District Council's costs (excluding the New Zealand Transport Agency's contribution) associated with consumption of pavement life on Port Waikato - Waikaretu Road (as far south as the Block A access), Tukeau Bridge - Port Waikato Road, Highway 22, Glen Murray Road, Pukekawa Church Hill Road and Waikaretu Valley Road.

The calculation shall be based on the following assumptions and inputs:

- viii) Design in accordance with the Austroads Pavement Design Guide
- ix) Current average daily traffic flows
- x) A 40 year design life,
- xi) An average 50% of pavement life consumed,
- xii) \$350,000/km pavement rehabilitation cost,
- xiii) A 10% discounting rate, and
- xiv) A 10% finance rate

The consent holder shall pay the cash contribution and/or implement any further works as approved in the final route reports.

To recognise the project construction traffic's consumption of long term pavement life the consent holder shall also pay a contribution of \$99,000 to Franklin District Council on completion of construction.

7.14 Any disputes arising in relation to calculation of the financial contributions in condition 7.13 shall be referred to an Independent Chartered Professional Engineer appointed by the President of the Institution of Professional Engineers New Zealand for a binding decision.

Advisory note:

It is anticipated that pavement rehabilitation will be required on some sections of roads as a result of wind farm construction traffic loadings. Conditions set in 7.13 require the consent holder to either undertake these works or meet Council's costs. The \$99,000 payment is to cover the gradual and unseen pavement deterioration on the roads used (i.e. the consumption of long term pavement life).