APPENDIX 3

ASSESSMENT OF ENVIRONMENTAL EFFECTS

Overview of Effects

The actual and potential adverse effects of the proposal relate to the following:

a. Economic Effects
b. Urban Design Considerations
c. Effects on Rural Amenity and Character
d. Noise Effects
e. Flooding Effects
f. Traffic Effects
g. Ecological Effects
h. Archaeological Effects
i. Effects on Cultural Values
j. Earthworks and Construction Effects
k. Geotechnical Matters

Economic Effects

1. The Economic Assessment assesses the likely economic effects of the proposal. The report, in summary, advises:

    a) Waimakariri District is experiencing strong population growth which is set to continue into the foreseeable future. As the district's population grows, so too does demand for housing. In particular, there is increased demand for aged care as the aging population increases. The growth rate of residents aged 70 plus is projected to increase by nearly 170% in the next 30 years.

    b) The district is unlikely to be meeting its obligations under the National Policy Statement for Urban Development to provide "at least" sufficient capacity "at all times" to meet ongoing growth in housing demand.

    c) Currently, there is little greenfield land available for development in Kaiapoi. The only significant undeveloped residential land left is the remainder of Beachgrove. Even then, this is limited to approximately 200 lots. As such, to meet ongoing growth in housing demand, new greenfield locations need to be opened up.

    d) An analysis of alternative sites has determined that there are only nine sites within Kaiapoi, inside the PIB, that are large enough to accommodate the proposed retirement village. None of these, however, are available for purchase and the majority contain existing land uses. As such, the application site is the only site in Kaiapoi that is suitably located and is available for development today.

    e) The main potential economic cost of the proposal is forfeiting the land for alternative uses, such as rural production. The productive viability of the site is, however, limited due to its small size and location surrounded by urban activities. This means that rural activities are not economically viable, and reverse sensitivity issues would likely result with neighbouring land uses.

2. With regard to economic benefits and positive effects, the report advises:

a) The proposal will provide a substantial, direct boost in the district's dwelling capacity, thereby helping to narrow the gap between likely future supply and demand.

b) Policy 1 of the NPSUD requires the provision of a range of housing typologies to meet a wide range of needs and preferences. The proposal gives effect to this by catering for a specific demographic which is projected to grow. Within the proposed retirement village development, there are also a range of unit and apartment sizes to cater for everyone.

c) The proposal provides an opportunity for existing Kaiapoi residents to "age in place", thereby retaining important social connections.

d) By providing housing options to the ageing population, this frees up older, larger dwellings for families or first home buyers.

e) Development of the land will provide significant commercial support for Kaiapoi businesses as retirement village residents travel significantly less than younger people on average. This means that the residents will shop and access services in Kaiapoi itself, rather than in Christchurch City.

f) The proposal seeks to enable a high-density, high-quality master-planned retirement village that puts the land to its highest and best use. In doing so, it maximises economic efficiency in the underlying land market.

g) The proposal will generate employment both in the construction phase and for ongoing operation of the retirement village.

3. Overall, the proposal results in a number of economic benefits which translate to positive environmental effects, with any material economic costs being avoided.

Urban Design

4. An Urban Design Assessment has been prepared by Saddleback considers whether:
   a) The site is an appropriate location for a retirement village.

   b) The proposal will deliver positive outcomes on the external environment.

   c) There are any potential adverse effects which are able to be minimised or mitigated.

   d) The internal environment provides quality living for retirement village residents.

5. The above matters are summarised below, with in-depth assessment provided in the Urban Design Assessment.

Appropriateness of site location

6. The site is located less than 500m from the northern part of the Kaiapoi Town Centre and is located midway between Williams Street and the Beachgrove subdivision. In this regard, it is entirely within an urban setting and separated from other rural land. The site is also close to other amenities, including the Kaiapoi Golf Club, Kaiapoi Domain, Kaiapoi Park and the Aquatic Centre, with pedestrian connections to the town centre via Meadow Street.

7. Kaiapoi, north of the Kaiapoi River, has been progressively developed in recent years with new subdivisions such as Beachgrove and Sovereign Palms. Beachgrove represented a change in urban form, providing comprehensive residential development akin to densities now provided for under the MDRS. As such, the 'centre of gravity' for urban development is shifting north, with the site effectively being located on the town centre fringe and fully enclosed by urban

development. The identification of the site (and adjacent land) as the only FDA in Kaiapoi indicates the township is anticipated to grow on the northern side of the river. There are limited aged care living options for the growing North Kaiapoi community, making the site an obvious location for a retirement village.

8. Section 2.3 of the Urban Design Assessment considers alternative site options and advises that there are few remaining parcels of land of a sufficient size and shape, and in contiguous ownership, within proximity to the town centre. There are not considered to be any viable alternative sites that offer the same level of amenity for residents and that integrate into the surrounding existing urban fabric.

9. Overall, the site is highly appropriate for development of a retirement village in terms of the site location and setting.

Built Form Design and Internal Amenity

10. The retirement village comprises three main built elements, these being the single level villas, the apartment blocks and adjoining lodge building, and the care home. The design rationale for these components is outlined in the Architectural Statement.

11. The Urban Design Assessment considers how the buildings integrate with, and contribute to, the surrounding urban environment and advises:

    a) The proposed swale assists in cementing a landscape-centric frontage to Beach Road. Boundary planting on both sides of the swale provides visual screening from beyond the site, enhancing visual amenity for both adjoining sites and the public realm.

    b) The park-like landscaping treatment proposed for the Beach Road frontage extends into the development itself, acting as a unifying element for the wider development.

    c) Both proposed entranceways are defined through formalised specimen tree planting, feature entry fencing, clear signage and low planting hedges. This means they are easy to locate.

    d) The private internal road network achieves a low-speed, pedestrian friendly character by integrating amenity features within the road edge landscape and differentiating surface treatments.

    e) Footpaths within the site will connect with public footpaths at both entry points.

    f) The central location of the lodge building and village green means they are easily accessible for all villa residents.

12. Overall, the Urban Design Assessment advises that *"the basic urban form performs well and balances the necessities to integrate with the surrounding community whilst also delivering the environment sought for the village itself".*

Height of Apartment Buildings

13. It is recognised that the height of the apartment buildings, at four and six levels, are higher than those in the surrounding area and those anticipated in a residential area. The Urban Design Assessment outlines the positive attributes of higher residential buildings, these being:

a) Higher buildings enable greater residential densities and more efficient use of land.

b) By occupying less ground area, they provide higher landscape amenity.

c) Higher visual prominence provides better legibility, identity, and wayfinding.

d) Passive surveillance of the site (internally) and the surrounding public realm (Crime Prevention Through Environmental Design).

14. In terms of potential adverse effects, these relate to visual dominance and overshadowing. In considering these potential effects, the Assessment advises:

Shading

a) Shading diagrams prepared by Foley Group demonstrate that shading falls almost entirely within the site. External impacts are limited to the paper road during the afternoon on winter days. As such, no adjoining residential properties are impacted by shading.

b) Within the site itself, the positioning of the apartment blocks means there will be no shading impacts on the majority of the villas. For those villas located behind the northern façade of the apartment buildings, there will be some minimal shading, but sunlight will still be received for reasonable periods throughout the day, including in winter.

c) Overall, any shading effects will be less the minor.

Visual Effects

a) For the adjoining sites on Williams Street, the positioning of the apartment buildings central to the site maximises separation distances from these properties. The majority of dwellings on these sites are located close to the Williams Street frontage. The only exception to this is 256 Williams Street which contains a rear unit. Furthermore, the boundary swale and associated swale planting will assist in visual mitigation. The Urban Design Assessment advises any visual effects on immediately adjoining neighbouring properties will be minor. These conclusions also apply to the adjoining sites off Beach Road.

b) Kaiapoi North School adjoins the site to the north. The main aspects for the school are to the north and west, away from the application site, with a sealed service area

c) adjoining the boundary with the application site. The existing tree line along the boundary of the application site will largely obscure the apartment buildings from both the school and residential properties to the north. As such, the Assessment concludes adverse visual effects on these properties will be less than minor.

d) Views from the shared pedestrian cycle path along the eastern boundary with the paper road will be limited to the upper levels of the apartment buildings. These views will be fleeting as pedestrians and cyclists pass the site.

e) For properties located on Johnson Street within Beachgrove, there is nearly a 150m separation between the apartment buildings and these properties. Any adverse visual effect on the owners and occupiers of these properties, and properties further into Beachgrove, will be less than minor.

f) Views from Beach Road will be softened by the large area occupied by the swale landscaping (over 30 metres wide). This will create a 'park-like' setting, with the apartments located behind

the care home building at between 90 – 160 metres from the road boundary. These large setbacks, combined with the boundary landscaping, will ensure any visual effects from Beach Road and properties on the southern side of Beach Road will be less than minor.

Rural Amenity and Character

15. While the site has a rural zoning, both the CRPS and the PWDP anticipate future urbanisation. Therefore, while there will be loss of rural amenity and character, such existing values are already low, and this is inevitable

16. The site currently contains two existing dwellings and a number of ancillary buildings. Storage of vehicles and machinery are clearly visible from the road and do not contribute to a quality streetscape. In this regard, the site does not constitute a typical rural environment which would be associated with large open areas and rural productive activities. As such, it is not considered that the site has high rural amenity values.

17. Furthermore, the surrounding activities are non-rural in nature and therefore the environment in which the site is located is a residential environment. The site no longer exhibits rural character in the normal sense, rather it is now a large vacant site within an urban environment.

18. Based on the above, any adverse effects on rural amenity and character will be less than minor.

Noise Effects

19. An Assessment of Environmental Noise Effects has been prepared by Acoustic Engineering Services (AES)**.** The report assesses two main noise matters:

    a. Noise generated from the site and effects on surrounding properties.

    b. Noise experienced on the site from aircraft flying overhead.

Noise Generation

20. The Noise Assessment advises that traffic on the main site access is likely to be the most notable noise source received at site boundaries. Other noise relating to use of the buildings and outdoor areas, and mechanical plant, is not anticipated to be elevated due to the setbacks achieved by the site layout.

21. The PWDP noise limits are more aligned with current best practice than the OWDP noise limits. They are consistent with, or more stringent than, national and international guidance for the protection of residential amenity and are also lower than the typical ambient levels in the vicinity of the site. Where compliance with the PWDP noise limits is achieved at neighbouring residential properties, AES advise that noise effects will be less than minor.

22. With regard to noise levels, AES advise:
    a) With a 1.8m high acoustic grade fence installed along the internal boundaries with 320, 322 and 324 Beach Road, these properties being closest to the main access, noise levels from peak daytime traffic will comply with both the OWDP and PWDP noise limits by some margin.

    b) Noise levels received at 31 and 36 Meadow Street, across the road from the access, will comply with the PWDP daytime and night time limits. The OWDP daytime limit may be

breached by up to 3dB during peak periods however these two properties are already exposed to higher noise levels from traffic on Beach Road itself and therefore this is a technical non-compliance.

c) Compliance with both the OWDP and PWDP noise limits will be achieved at all other properties.

23. The 1.8m high acoustic fence has been proposed as part of the application. On this basis, the PWDP limits are complied with at all surrounding sites and therefore any noise effects will be less than minor.

Aircraft Noise

24. The site is located within both the operative and recently remodelled 50 dB Ldn aircraft noise contours for Christchurch International Airport. These contours extend over a significant portion of the Kaiapoi township, with noise sensitive activities already established within the contours. Within the vicinity of the site these include residential dwellings, Kaiapoi North School and the Beachgrove preschool. The Sterling retirement village in Silverstream is also partially within the contour.

25. The Noise Assessment considers likely noise effects from aircraft on future retirement village residents. Directly linked to this is the potential for reverse sensitivity effects on Christchurch International Airport.

26. With regard to noise received at the retirement village and effects associated with this, the Assessment advises:

a) The draft remodelled contour reflects the most up to date predictions on the potential future noise effects for the site. The operative contour no longer accurately represents the current or future noise effects.

b) For typical aircraft overflights, acceptable aircraft noise levels can be achieved within the sensitive areas of the buildings, in most cases with windows open for ventilation and without any specific acoustic design. The apartment blocks and care home are mechanically ventilated and do not rely on natural ventilation.

c) Where there is overflight from a particularly loud aircraft (e.g. Airbus A380), there may be some sleeping areas in some villas which will need windows to be closed to achieve the internal design targets. It is noted, however, that the OWDP does not include rules relating to sites in the 50 dB Ldn noise contour and the PWDP noise limits are based on windows and doors being closed. It is therefore anticipated that indoor noise levels are able to comply without any specific design (including from louder aircraft).

d) With regard to outdoor living areas, some disruption to normal speech may occur during an aircraft approach close to the site, primarily those using Runway 20. Not all residents will be exposed to this, however, as a large number will have limited interaction with the outdoor environment (e.g. care facility residents).

e) The retirement village will have a single operator, which create opportunities for site-specific mitigation to be implemented. These include:

- All residents will be subject to an Occupational Right Agreement (ORA) that will advise that the retirement village is under a flight path and prohibit noise complaints about the airport. This will also be outlined in a Frequently Asked Questions document which residents will be provided with prior to signing the ORA.

- Approximately 68% of residents will reside in either the apartment blocks or care home. These buildings will be climate controlled, with a fresh air ventilation system. Residents will therefore typically receive lower internal noise levels than a typical dwelling which relies on natural ventilation.

- A large portion of residents will come from Kaiapoi, meaning they may already be exposed to higher levels of aircraft noise than would occur at this site.

27. Based on the above, the Noise Assessment concludes that effects resulting from future aircraft noise levels at the site will be minor for residents, primarily due to the aircraft noise levels received in outdoor areas.

Flooding Effects

28. Flood modelling has been undertaken by Tonkin + Taylor for the 5, 50 and 200 year events. This involved obtaining Council's flood models and updating them with pre-development and post-development scenarios. The purpose of the modelling was to assess the effect of infilling the site on surrounding flood levels. The modelling results are summarised below, with individual flood level increases/decreases for each adjoining property outlined in Appendix C of the 5 and 50 year Flood Modelling Assessment.

Five year event

29. In the 5 year Annual Reoccurrence Interval (ARI) event, flood depth in the post-development scenario reduced by up to 8mm along the Williams Street properties to the west of the site on account of the proposed swale. Flood levels increased by up to 10mm on the land to the north of the site. Both of these changes are within the accuracy of the model.

Fifty year event

30. In the 50 year ARI event, flood levels increase by up to 30mm on neighbouring properties to the west and north of the site. This flood level will remain below the finished floor levels of the buildings on these properties, with available freeboard ranging from 200 – 600mm. Tonkin + Taylor conclude that the increase in flood levels would have a no more than minor effect.

31. Only one property, 286 Williams Street, is flooded in both the 5 year and 50 year events for both pre-development and post-development scenarios. This is due to a low floor level of 1.21m RL. The increase in flood depth is 1mm, which is within the margin of error of the model.

32. The attenuation capacity of the proposed swale (1600m3) will ensure that increase in flood peak to the receiving drainage network as a result of filling the site will be mitigated.

200 year event

33. Three 200 year ARI models were used, being the Ashley River breakout flood model, the localised flood model and the coastal inundation with 1m sea level rise (SLR) model.

34. For the Ashely River breakout and localised models, flooding within the site is largely generated by river and rainfall derived flooding within the surrounding floodplain. For the coastal

inundation model, flood levels are primarily generated by water breaching existing stopbanks along the Waimakariri River.

35. Pre-development and post-development scenarios were modelled for all three 200 year models, with maps produced to show the flood level difference (post-development minus pre-development). Existing floor levels of buildings were also surveyed within the surrounding area along Williams Street and Beach Road, and for Kaiapoi North School and rural properties on Ferry Road. The results indicated:

    a) No additional properties are flooded in any of the three models.

    b) For properties that are already flooded, flood levels only rise by up to 10 to 20mm.

36. Overall, Tonkin + Taylor conclude that flooding effects will largely be less than minor and within the margin of accuracy of the model. The 30mm increase in flood levels for the Williams Street properties in the 50 year event will have minor effects.

Traffic effects

37. traffic effects of the proposal are assessed in the Carriageway Consulting Transportation Assessment**.** While the site is in the Rural Zone, the site has been assessed as being within an urban environment given the surrounding residential land use. The report makes the following conclusions:

    a) The proposed site accesses can accommodate the anticipated traffic flows without impacting the safety and efficiency of the adjacent road network.

    b) The surrounding area contains well-developed walking and cycling links, supporting the ability to travel by non-car modes. Furthermore, the proposal to extend the Beach Road footpath along the site frontage will further support walking trips.

    c) There is an existing zebra crossing to the west of the site (outside 332 Beach Road) and a pedestrian refuge to the east (outside Active Explorers preschool). These allow residents to safely cross Beach Road to either walk or catch a bus to town.

    d) The internal roadways have been designed as a very low speed environment (up to 15km/hr).

    e) The main circulation route through the site will have a carriageway width of 6m, which is sufficient for a refuse truck to pass a car (or two cars to pass) and localised widening has been provided at internal intersections and on curves to ensure appropriate clearances are maintained.

    f) The roadways that serve the cul-de-sacs on which the villas are largely located will be formed with a 4.5m carriageway. These serve, at most, eight villas, meaning that at peak times the traffic flow will only be 3 - 4 vehicle movements per hour. The potential for two cars to meet one another is therefore extremely low, but in such instances, the available width means that there is the ability for the cars to, slowly, pass each other.

    g) The site provides a network of footpaths which are 1.5m wide, and these are largely

    h) located centrally around the main buildings. These enable residents to move about without needing to share the movement lanes.

i) While there are no minimum car parking requirements, the proposed car parking supply is ample for the number of units proposed.

38. Overall, the Transportation Assessment advises that the proposal can be supported from a transportation perspective. Based on no transport related issues being raised, any adverse effects will be less than minor.

Ecological Effects

39. The potential ecological effects of the proposal are assessed in the Ecological Assessment. The report advises:

a) There are no wetlands on the site.

b) The botanical value of the vegetation within the site is very low, being heavily dominated by exotics and pasture.

c) There is no native vegetation, with the exception of a small, planted area of flax and cabbage trees.

d) The vegetation within the site provides low-quality fauna habitat due to the lack of complexity, high edge effects and low terrestrial connectivity.

e) No significant indigenous lizard habitat was identified on the site.

f) Arboreal geckos are not likely to be present due to the lack of suitable vegetation and lack of connection to areas of suitable vegetation.

g) Limited avifauna was observed on the site, with only common bird species observed.

h) No natural freshwater features are present on the site. All surface water comprises artificial drains constructed for farm drainage purposes, with drainage ditches dry for much of the year. The drains do not provide habitat for fish and water levels mean fish passage is not possible.

i) The ecological values of both the eastern drain and the Beach Road drain are low.

j) Extensive landscaping is proposed throughout the site which will significantly increase botanic and ecological values, resulting in positive effects.

k) While construction activities will result in loss of, and disturbance to, fauna habitat, birds displaced from the site will utilise the wider surrounding landscape.

l) While the onsite farm drains are proposed to be filled in, there will be no loss of ecological values as these drains do not provide significant freshwater habitat. The drains are ephemeral in nature and lack connection to other surface waters.

m) Despite some loss of habitat within the eastern and Beach Road drains, no significant long term residual effects are anticipated.

40. The report includes the following recommendations to avoid, remedy and mitigate potential adverse effects on the ecological values of the terrestrial and freshwater environments on the site:

a) Preparation and implementation of an Erosion and Sediment Control Plan.

b) Plantings are undertaken in accordance with the Landscape Concept Plans.

c) Preparation and implementation of a Freshwater Management Plan.

41. The applicant volunteers the above three recommendations as consent conditions.

42. Overall, based on the conclusions reached in the Ecological Assessment, any adverse ecological effects are less than minor.

Archaeological Effects

43. An Archaeological Assessment has been undertaken by Underground Overground Archaeology**.** The Assessment includes both the retirement village site (referred to as "Block 1") and land at Ferry Road proposed for medium density housing (subject to future applications). The Ferry Road land includes McIntosh Drain, an archaeological site, however this drain does not intercept the retirement village site and therefore any reference to McIntosh Drain is not applicable to this current application.

44. With regard to the application site, the Assessment advises:

a) Building developments are first evident on the site in aerial imagery from the early 1980s.

b) Prior to the 1980s, the land was likely used for pastoral/agricultural purposes. No pre- 1900 farming features were, however, identified on the site.

c) An archaeological authority under Section 44 of the Heritage New Zealand Pouhere Taonga Act 2014 will only be required for works associated with McIntosh Drain.

45. Based on the findings of the Archaeological Assessment, no archaeological authority is required to be obtained and any archaeological effects will be less than minor.

Cultural Values

46. The applicant has consulted with by Mahaanui Kurataiao (MKT) with regard to any impacts the proposal may have on mana whenua cultural values. A Cultural Values Statement has been prepared by MKT. This advises:

    a) The site is part of a wider landscape of cultural significance for Te Ngāi Tūāhuriri Rūnanga. This landscape includes Kaiapoi Pā, kāinga nohoanga, mahinga kai, and former and contemporary Māori reserves as well as many other locations of importance.

    b) Ngāi Tūāhuriri hold rangatiratanga over any kōiwi tangata and taonga tuturū in this area, as is provided for by the Crown Apology to Ngāi Tahu in the Ngāi Tahu Claims Settlement Act 1998.

    c) The proposed works will involve disturbance to the ground, that may disturb or damage, previous unrecorded Māori archaeological material. While there are no archaeological sites in the proposed location of works, there are recorded Māori archaeological sites in the wider area. While the likelihood of encountering archaeological material associated with Māori occupation and activity during these specific works is low, the possibility cannot be discounted.

47. Based on the above, Mana Whenua have advised that the following specific protocols should be adhered to:

    a) The authority holder is required to contact Mahaanui Kurataiao Ltd at least 10 days prior to earthworks commencing to notify that the project is underway.

    b) Earthworks should proceed under an Accidental Discovery/On-Call Protocol. This protocol must be strictly adhered to at all times during earthworks.

    c) A suitably qualified archaeologist approved by Heritage New Zealand Pouhere Taonga must brief all on-site contractors on how to identify Māori archaeological material and on the specifics of the protocol referenced above.

    d) If Māori archaeological material is encountered during works, a suitably qualified archaeologist approved by Heritage New Zealand Pouhere Taonga must be onsite to record and monitor earthworks in the location of the archaeological material.

    e) If Māori archaeological material is encountered during works, a member of (or a cultural monitor mandated by) Mana Whenua, trained in the recognition of archaeological deposits, must be onsite (if available) to assist the archaeologist and offer cultural advice and support during excavations.

    f) Should any previously unrecorded archaeological deposits be uncovered all work will stop immediately to allow time for the appropriate recording and sampling of the deposit. It is expected by Mana Whenua that the methods of archaeological investigation employed by the attending archaeologist will aim to gain as much information from the site as possible while maintaining tikanga Māori (with the exception of kōiwi tangata; see below).

    g) Should any kōiwi tangata be located all work will stop immediately and the appropriate procedure of notification must be followed as per Heritage New Zealand Pouhere Taonga guidelines and instruction from Ngāi Tūāhuriri kaitiaki.

    h) Representatives of Mana Whenua will be consulted regarding cultural requirements to ensure appropriate ceremonies and karakia take place.

    i) The exhumation and re-interment of kōiwi tangata will be performed in consultation with Mana Whenua.

    j) That where any excavation work is performed by mechanical digger that "finishing buckets" (buckets without teeth) be used on the digger in order to assist in identification of any archaeological sites present, minimise damage to those site(s).

    k) That the any storage or display of any artefacts located on site during earthworks or other activities related to the preparation of this site be determined in consultation with Mana Whenua.

    l) That any reports (i.e., archaeological assessments, geotechnical assessments, archaeological monitoring reports) be sent to the Mana Whenua office and to the office Mahaanui Kurataiao Ltd).

48. The applicant agrees to adhere to the protocols outlined above and to undertake earthworks in accordance with an Accidental Discovery Protocol. On this basis, it is considered that the cultural values that Te Ngāi Tūāhuriri Rūnanga hold will not be compromised.

Earthworks and Construction Effects

49. Earthworks and construction activities are a necessary component to enable the land to be developed. In this sense, they are anticipated with land development of this nature.

50. In order to mitigate any potential adverse effects from the earthworks associated with this development, an ESCP will be prepared and implemented as part of the engineering works. The ESCP will be prepared in accordance with Environment Canterbury's Erosion and Sediment Control Toolbox.

51. An ESCP is a recognised method to prevent undue erosion and the risk of sediment laden stormwater discharge entering any drains or waterbodies. This may include the use of silt fences, sediment basins, clean water diversions, minimising the area of ground disturbed at any one time and re-establishing ground cover.

52. Measures will also be implemented to suppress dust during earthworks. The suppression measures will be developed in accordance with Schedule 2 of the Canterbury Air Regional Plan to meet the permitted activity conditions of Rule 7.33 of that Plan. Subject to the appropriate construction methods, the dust control measures are considered to protect the surrounding environment from dust emissions that may arise during the construction works.

53. The contractors for the development will be required to adhere to the ESCP and dust suppression measures.

54. To ensure the effects of construction activities are appropriately managed, a SMP will be submitted by the consent holder for certification prior to site works commencing. The SMP will include:

    a) Methodology for the timing and staging of works;

    b) Details of site access and manoeuvring for heavy vehicles;

    c) The Erosion and Sediment Control Plan;

    d) Measures to prevent fugitive dust and windblown sediment beyond the site boundary;

    e) Management measures, including organisational responsibilities for implementing, monitoring, reporting and maintenance of the proposed erosion and sediment control and dust management measures;

    f) Measures for communicating with neighbouring landowners and occupants about proposed works; and

    g) Complaints procedures and register.

55. In addition, in order to address potential adverse effects associated with construction works on the transport network, the applicant proposes to prepare a Temporary Traffic Management Plan prior to works commencing.

56. As previously stated, all works will be undertaken in accordance with NZS 6803:1999 *Acoustics – Construction Noise.*

57. Overall, it is considered that any adverse effects associated with bulk earthworks and construction activities can be appropriately managed through consent conditions which require management plans to be developed and implemented.

Geotechnical Matters

58. A Geotechnical Assessment has been completed by Tonkin + Taylor. An initial investigation has been undertaken for resource consenting purposes, with further investigations to be completed as part of the building consent process.

59. Based on the results of initial geotechnical investigations, liquefaction assessment and soft soil assessments, likely building foundation types have been identified. These range from concrete slabs to deep piles, with the report demonstrating that there is an engineering solution available for all building foundations.

60. The Assessment outlines that groundwater levels are in proximity to the ground surface. Any potential interception of groundwater and associated site dewatering will be addressed in consents required from ECan.

61. Overall, the Assessment concludes that the proposed development is feasible from a geotechnical perspective.

Conclusion on Effects

62. The above assessment has demonstrated that any actual or potential adverse effects of the proposal are able to be appropriately mitigated and will be no more than minor.