

ASSESSMENT OF EFFECTS

Patricia Harte is a consultant Planner with Davie Lovell-Smith, Planners, Engineers and Surveyors of Christchurch. Ms Harte prepared planning evidence on behalf of Doncaster Developments for the Waimakariri PDP hearing. Excerpts from Ms Harte's evidence relevant to an assessment of adverse effects are set out below:

Ms Harte's summary of potential impacts of the development draws from the specialist reports and evidence relating to transportation, visual/urban design, contamination, geotechnical and infrastructure assessments and evidence.

Roading and access

- The site is well-connected to the wider road network to and from the South, South East, North, North West and West.
- The site is serviced by a nearby bus "park and ride" facility on River Road which links through to Christchurch.
- The highest concentrations of site generated traffic concentrations would occur on Lehmans Road, Charles Upham Drive, Sandown Boulevard, Oakwood Drive, Belmont Avenue and West Belt and the key intersections impacted from traffic generated by the new zone are:
 - Lehmans Road and Oxford Road
 - West Belt with Oxford Road and High Street
 - West Belt with Belmont and Kingsbury
- Based on an estimated 110 allotments being created the modelled generation shows that the identified roads remained within suitable volumes given their hierarchy classification and that there is unlikely to be any material effect on the performance of the identified key intersections.
- A search of the NZTA CAS database for the most recent 5-year data period (January 2018 to December 2023) was undertaken for the area encapsulated by Lehmans Road, Oxford Road, West Belt, Huntington Drive and Arlington Boulevard. Analysis of the crash data confirms that there are no existing road safety issues with the operation of the surrounding transport environment in the wider vicinity of the subject site that would preclude it from accommodating additional traffic flows.

Urban Design

- The ODP provides for good connectivity within and beyond the site including a park and ride facility to Christchurch close by on River Road.
- The street pattern will enable a diversity of house and lot sizes including higher density close to open spaces.
- Walking and cycle network links both internally and to adjoining existing and future residential areas and community facilities.
- Proposed green space and facilities will serve the future population.

Infrastructure

- The good ground conditions allow low risk, cost-effective subdivision development and house construction.
- Stormwater from hard-surfaces can be managed onsite through soakage based disposal which will not put any additional demand on downstream infrastructure.
- Water supply and wastewater can be efficiently served by extensions to service the site.

Contamination and Geotechnical

- There are no geotechnical issues and the existing burn pit can be easily remediated.

Economic

- Higher density residential developments, while benefiting from an improved efficiency on amenities, can also suffer from lower amenity outcomes due to increased density, noise, waste pollution as well as higher levels of traffic. This can be damaging to both the environment and the existing populations amenity values in neighbouring suburbs. However, these potential costs can be mitigated and managed through good design and good planning. The proposed scale of development within this site would not likely to reach a threshold where these concerns become relevant.
- A significant proportion of the land surrounding Waimakariri existing townships are currently surrounded by the most productive, or versatile, soils, across the country (i.e., LUC¹ Class 1-3 soils). As urban environment expands into these productive areas there has

¹ *Land Use Capability Classification*

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been a concern that productive land is not being adequately protected. As such, more dwellings being built within the same footprint will ensure the district has somewhere for its growing population to live and work– mitigating effects on its productive land.

The above assessments conclude that there are no adverse effects, including adverse environmental effects, anticipated from the MDR rezoning of the Doncaster site and its subsequent residential development.

Climate change and natural hazards assessment

From Aurecon Infrastructure Servicing Report prepared for Doncaster Developments Ltd 2/09/21

1.2.6 Ashley River Flood Hazard

The Ashley River is located to the north of the site and flows in a west to east direction. Environment Canterbury (ECan) has undertaken flood modelling work to identify possible breakouts of the Ashley River. The modelling maps illustrates the worst-case scenario from a combination of three different modelling methods including localised flooding, flooding resulting from the Ashley River Breakout and Coastal flooding. The localised flooding relates directly to the rainfall on the ground while the Ashley Breakout flooding includes flow directly from a breach of the stop bank plus the localised rainfall which would occur simultaneously. The water depths modelled represent the water depths anticipated for the 200-year Average Recurrence Interval (ARI) for each modelling method. For the Ashley Breakout flooding scenario, a 200 ARI breakout from the Ashley River was modelled in conjunction with a 20 localised rain event.

The classification for the area is Low Hazard (Figure 2) which is summarised as less than 0.3m of water depth with some water egress into sheds and structures with floor levels near or at ground level. It is proposed that any flood risks will be minimised through the construction of sections to achieve minimum the floor levels in accordance with WDC requirements and grading of finished ground to roadways to provide overland flow paths through the site. This approach has been applied successfully to surrounding development in west Rangiora as demonstrated by the flood maps which show flooding is largely confined to roadways and reserve areas of recent developments south and east of the site. Development of this site will also provide opportunity to address minor residual areas of flood risk to existing properties adjacent the future bypass road (Parrott Road) corridor.

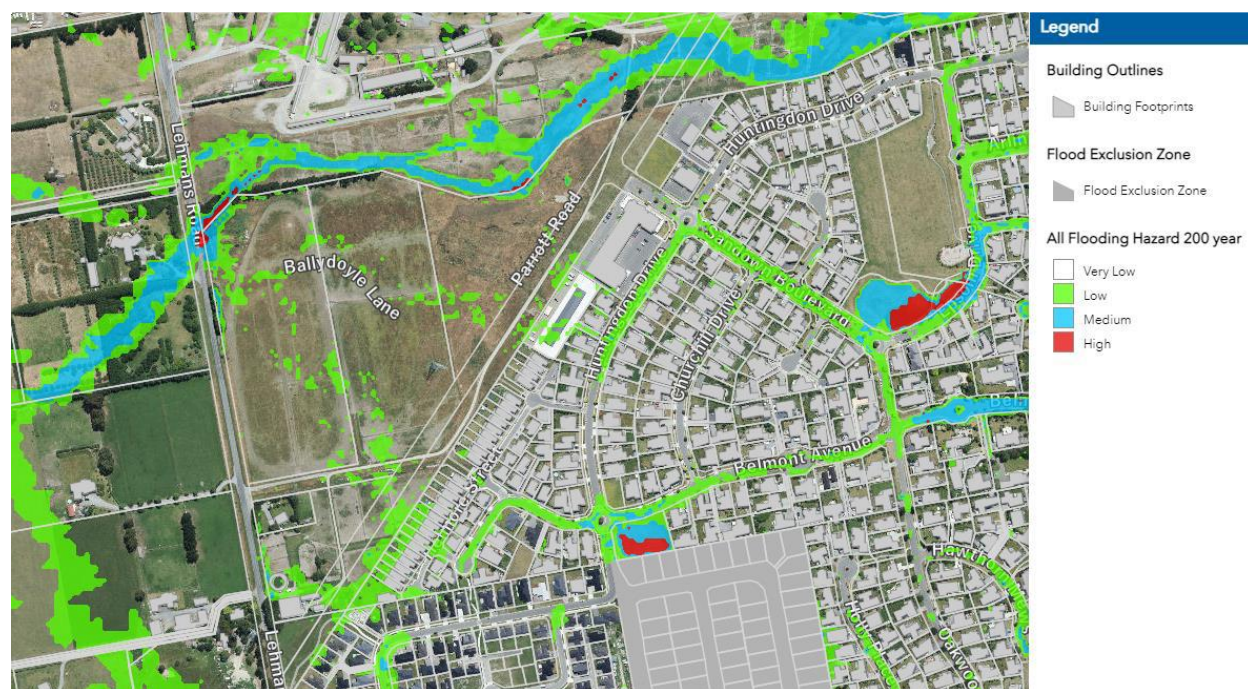


Figure 2: Flood hazard modelling Waimakariri District Council
(source Waimakariri District Natural Hazards Interactive Viewer (arcgis.com))

FLOOD HAZARD ASSESSMENT

Characterising the flood risk

The Ashley River is located to the north of the site and flows in a west to east direction and the river presents a material risk of breakdown to some areas in the lower plains. Coupled with this are the risks from localised flooding from rainfall and coastal flooding from ocean sourced water inundating the dunes and flowing onto the plains.

The Council, with Environment Canterbury, has modelled water depths modelled for a range of scenarios, and the 200-year and 500-year Average Recurrence Interval (ARI) are presented here. Note that the 200 year breakout event was modelled in conjunction with a 20 year localised rain event while the 500 year breakout was modelled with the 50 year localised rain event.

The classification for the area is Low Hazard; summarised as less than 300mm water depth.

Water is confined to the two known flow paths across the site which pass from the west towards the east. The remainder of the mapped flooding is likely to be modelling 'noise' generated from the surface model or residual shallow ponding.

Flood risk assessment

On the basis that any development of the site does not lead to a blocking or damming of the two existing overland flow paths, then the flood hazard for the Site is considered to be low.

Normal earthworks to shape the land for residential development will remove the residual ponding (if any), notwithstanding that this will have no consequential impact on property. The flow paths could be reshaped to more effectively pass the flow and mitigate impacts on the adjacent properties to the east of the unformed Parrot Road.

Improving protection from an Ashley River breakout

WDC has advised⁴ that they are currently engaging with Environment Canterbury about how it can improve the level of service in terms of reducing breakout risks from the Ashley and that Environment Canterbury are currently working on high level plans that will establish the framework for the river, including setting the desired level of services.]



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Once this has been completed, an options assessment on physical or operational options are planned to be undertaken, including considering cost estimates and funding mechanisms. The timeframe for this is uncertain.

One of the options will be construction of secondary stopbanks to return any flow that has breached the stopbank back to the river. WDC also advise that, some time ago, a map was produced by ECan staff which showed a possible alignment for a secondary stopbank being along the proposed Parrott Rd between Lehmans and River Roads. This map has no standing and has not been developed as part of a wider assessment.

WDC advise³ that, if this area in question was to be rezoned for residential, then that original alignment would have significant disadvantages, both in terms of failing to protect a residential portion of the town and constraints on spaces and it could be concluded that a secondary stopbank in the sketched location would be difficult to support, however until a full assessment was carried out on all options, the matter cannot be conclusively rejected.

It may be possible to consider a route for a secondary stopbank that is integrated with the northern edge of the development however this has not been explored by WDC or ECan at this stage.

As such, flood risk should not form an impediment to development of the site and development of the site may offer flood hazard benefits to the township.

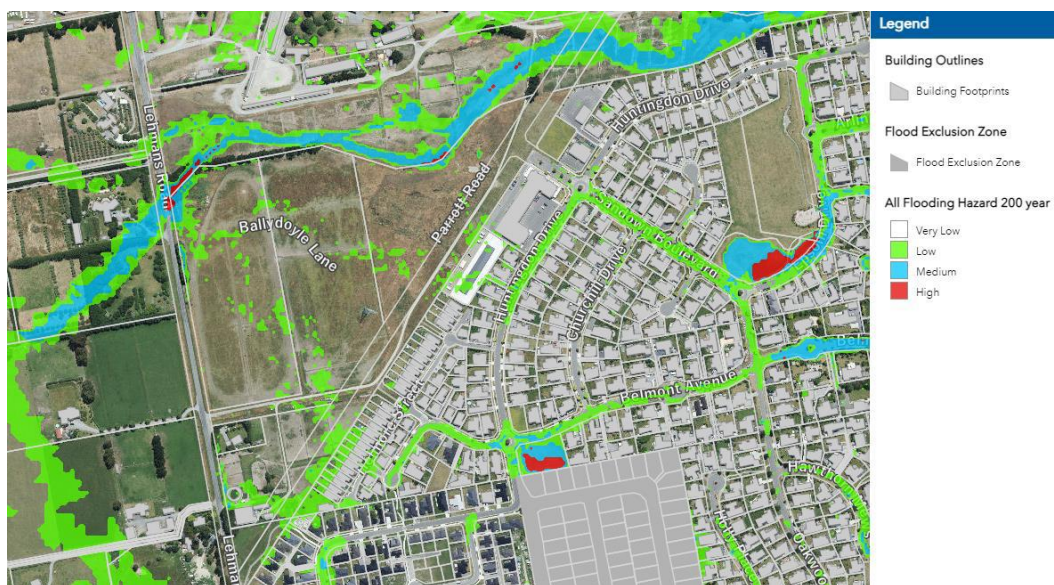
CONCLUSION

Drawing on the assessment above, coupled with the information drawn from other assessments of the area, flood hazard or utility servicing should not form impediments to development of the site to any reasonable density of residential land use.

Excerpt from the Evidence of Regan Smith, a Chartered Professional Engineer and a Professional Member of Engineering New Zealand.

Flood Risk

- 1 The Ashley River is located north of the site and flows in a west to east direction. There is an associated risk of breakout that could affect areas of the lower plains, including the site. Council and Environment Canterbury have modelled a range of scenarios including combinations of local flooding combined with a breakout of the Ashley River.
- 2 The predicted flooding on the site in a 200 year ARI breakout event combined with a 20 year ARI local event illustrated in the flood map below. There are two minor flow paths across the site with a corresponding "Low Hazard" classification (<300mm depth).



- 3 Both the Aurecon and Kerr and Partners reports conclude that provision for the flow paths can be made through development works to mitigate the potential risk to residential lots. It is also noted that there is opportunity to reduce impacts on existing properties to the east through more effective shaping of the flow paths.
- 4 As can be seen in the above flood map, this concept has been applied to adjacent developments successfully diverting flows along roads or reserves and protecting residential lots.

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- 5 On this basis, I consider that flood risk can be adequately managed for the site and should not be considered an impediment to development, and that development of the site could potentially offer flood hazard benefits to the adjacent residential area.
- 6 The site is potentially affected by flood breakout from the Ashley River. However, the predicted level of flooding is considered below the "Low Hazard" category and the risks can easily be managed through landform design as part of the development process. This could also provide opportunity to further reduce flood risk to adjacent residential properties.
- 7 From an infrastructure and natural hazard perspective, I consider the Site to be entirely suitable for the higher level of development which is sought in Doncaster Developments submissions.