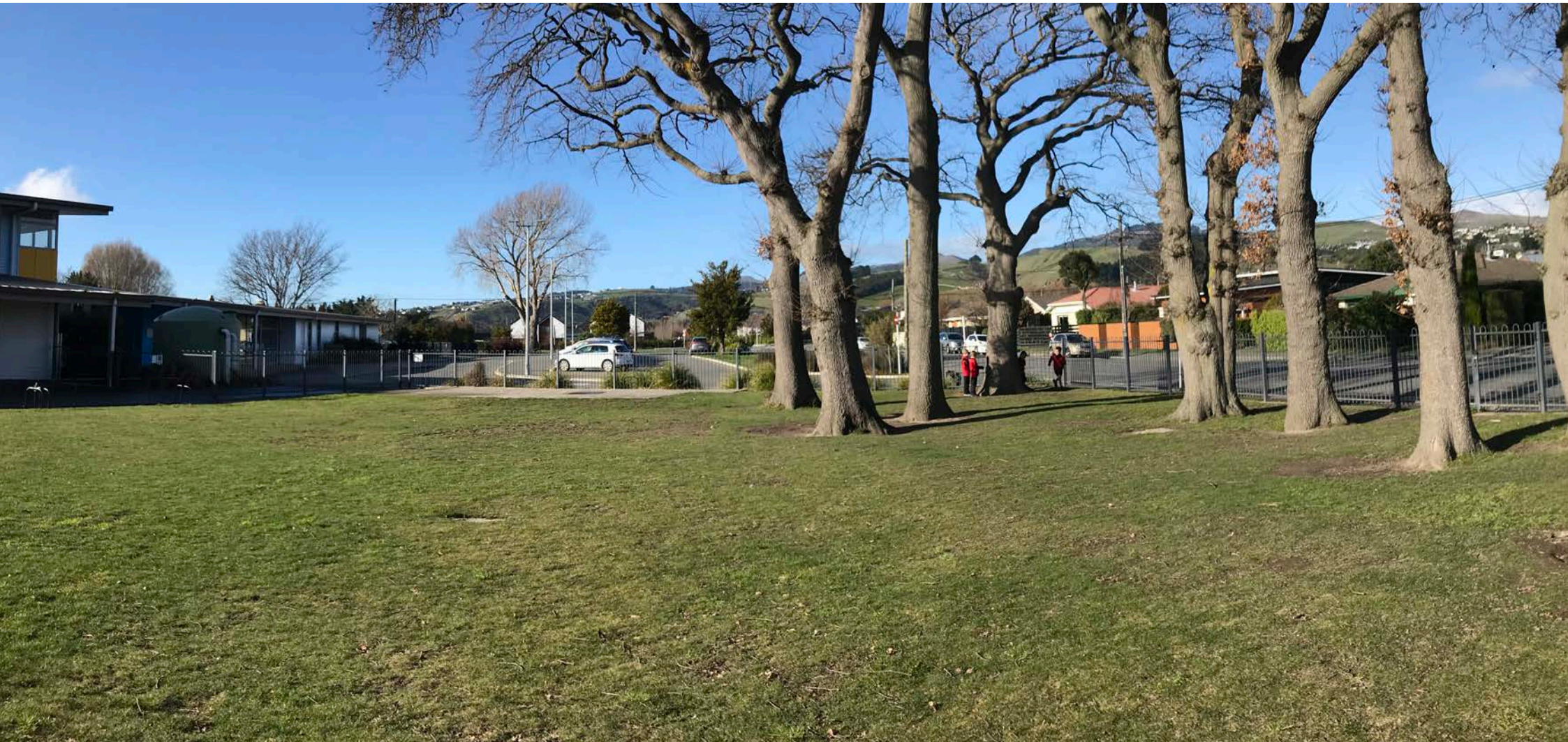
Boffa Miskell

HALSWELL SCHOOL- TE KURA O TE TAUAWA

ASSESSMENT OF OPTIONS FOR ALL WEATHER COURT

21 JULY 2021



PROJECT CONTEXT

INTRODUCTION

Boffa Miskell have been engaged to review the proposal to install a multi-use all weather court surface on a grass area on the south boundaries of the Halswell School - Te Kura o Te Tauawa just west of the parking lot entry.

With growth in the school roll and the ongoing need to close the main field for periods of wet weather restricts the children to the confined hard courts areas in the centre of the school. This creates overloaded spaces and can result in more friction during play times and less opportunities for the children to burn off energy. The proposed all season sports court is intended to help relieve this pressure and provide an efficient use of space.

The proposed site has been nominated by the school board as being the most suitable location within the school grounds as it has sufficient space, is currently under utilised and free of structures and other infrastructure.

The school currently has funding from MOE to help cover the cost of constructing the court however this is time limited. If the court is not progressed shortly these funds will need to redirected to other projects. The key decision point is therefore whether to:

Utilise the funding to build the court now which will result in the removal of 10 out of the 11 mature Oak trees (Quercus robur) on the site,

or,

Redirect the funding and maintain the existing site condition - keep the trees for their remaining life span which is estimated at 15-25+ years.

To assist the school board and wider community in making this decision we have set out a summary of existing conditions, impacts of the sports court development in the short term and long term versus leaving the area as is, and deferring the sports court proposal for a possible future project.

As we understand it there is no commitment to either option and the final decision will be determined via a community survey.

This work is informed by an Arboricultural assessment by Simply Arb (June 2021), a ground contamination assessment by Tonkin Taylor (25th March 2021), and a site visit and conversation with School Principal, Stuart Cameron in early July 2021

EXISTING CONTEXT

The site is currently grassed with the Oak trees clustered along the southern boundary adjacent to School Road

The site is secured on three sides with approximately 1.5m high fencing.

The main sports field is located to the west of the site at a slightly higher elevation (approx 0.5-0.8m) with a drainage swale separating the proposed court site.

An existing concrete pad on the eastern side of the site was formally used for bike parking which has new been relocated.

The existing Oaks range in height from 15 to 18m and are estimated based on historic aerial photos at over 100 years old.

Given their longevity and size, the trees form for an important local landmark for the community and a gateway to the school.

Investigations by Tonkin Taylor indicates there are trace levels of asbestos in the south east part of the site and any earthworks will need to manage this appropriately.

EXISTING TREES

The existing trees have been assessed in detail by consulting Arbourist SimplyArb. As the 10 eastern-most trees are closely planted they have grown reliant on the support and shelter of their neighbours.

The Arboricultural report states that the trees are approaching the end of their expected lifespan and are not expected to grow much beyond their current size. Under the status-quo ‘no court scenario’, it is estimated these could live another 15-25 years.

While the court could be located to retain up to 6 of the 10 trees, the increased stress due to increased wind and weather exposure makes it likely the remaining trees will experience accelerated decline. On balance, given the cost and risk of managing safety issues of declining trees immediately adjacent to a play area, the Arbourist advises the only feasible options are either retaining all, or removing all 10 of the eastern trees.

The western most tree is sufficiently separated from the main cluster that it can be retained should the court construction proceed.

PROPOSED COURT

The proposed multi-use court is a 32x20m synthetic sports court product installed on an aggregate base with a 10mm rubber underlay to provide a safe durable, all weather surface. the court will be used for a range of PE and sports opportunities eg hockey and futsal. The court will be available for after hours community use and it is noted there are few other easily accessible public all weather courts in the Halswell area.

This court would be aligned parallel to the existing fence on the northern boundary of the site.

The proposed turf product does not require a sand or rubber crumb filler which is typically the most common contaminant of concern from synthetic courts. The fibres are a polyethylene plastic based product on a polypropylene and latex backing. The turf will shed micro plastics as it wears and deteriorates over time. Drainage of artificial turf areas should be carefully managed to capture and filter any microplastics from runoff through planting beds or grass areas before it enters the storm water system. Specialist filter units can be installed at adjacent drainage points to capture this if necessary.

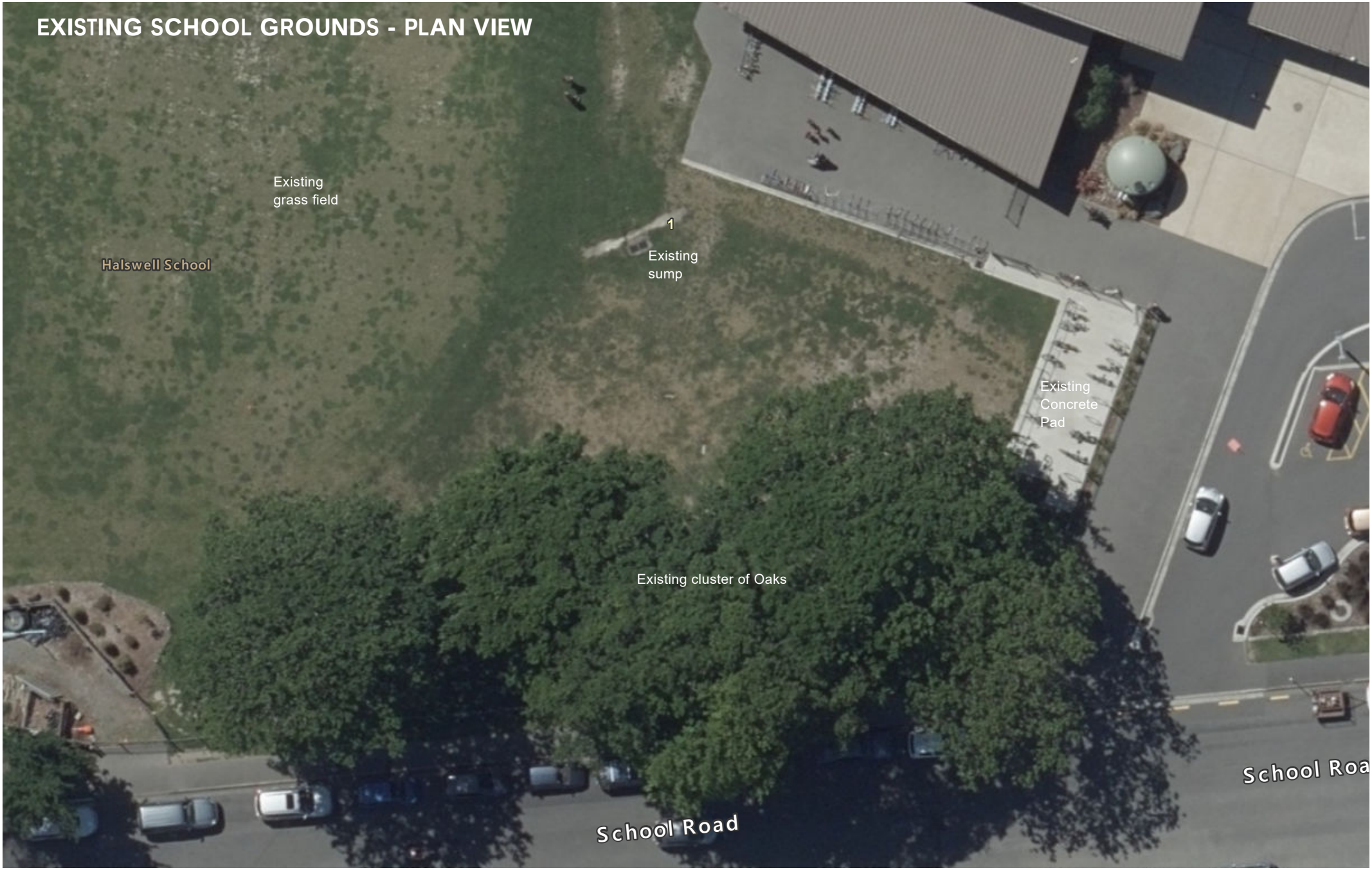
Life spans of these type of turf products are variable depending on level of use. Online information from suppliers indicate with a quality product and high standard of installation and maintenance 15 to 20 years of use is possible. Currently there are no NZ based recycling facilities for this material at end of life.

A tall chain link mesh fence is proposed around the eastern half of the courts to prevent errant balls from entering the parking area. The western end would be graded to blend into the existing field and will allow free access to and from the all weather court.

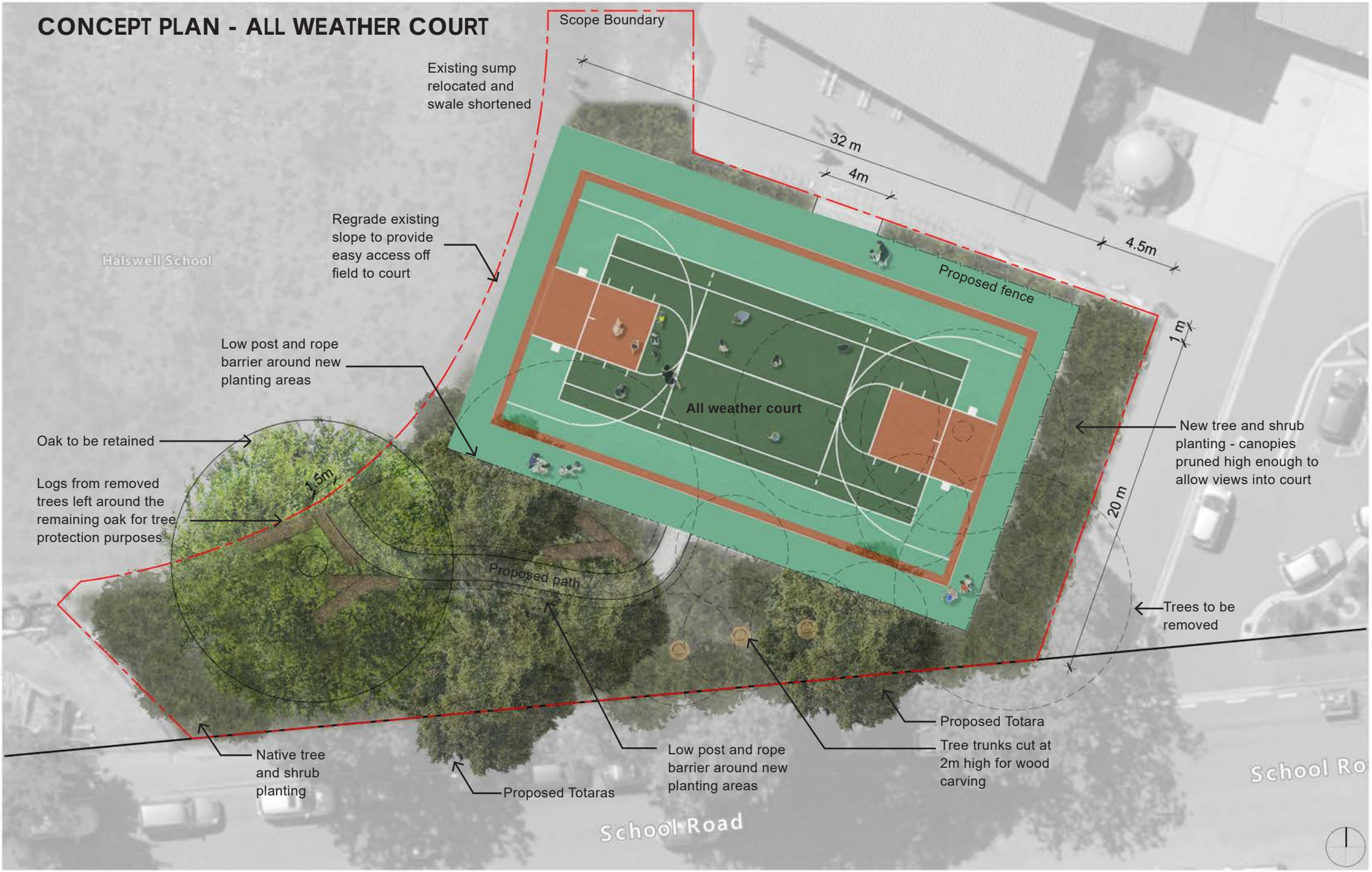
In conjunction with the court development, an area of approximately 630 sqm of indigenous planting would be implemented to help compensate for the loss of the Oaks. This will improve overall biodiversity within the school grounds and shelter the court from southerly winds.

Buffer planting on the eastern side of the court will provide shelter from the east. Trees to be pruned to lift the canopy enough to allow views into the court to allow passive surveillance. The school has adopted a policy that any new planting is to utilise indigenous species.

EXISTING SCHOOL GROUNDS - PLAN VIEW



CONCEPT PLAN - ALL WEATHER COURT



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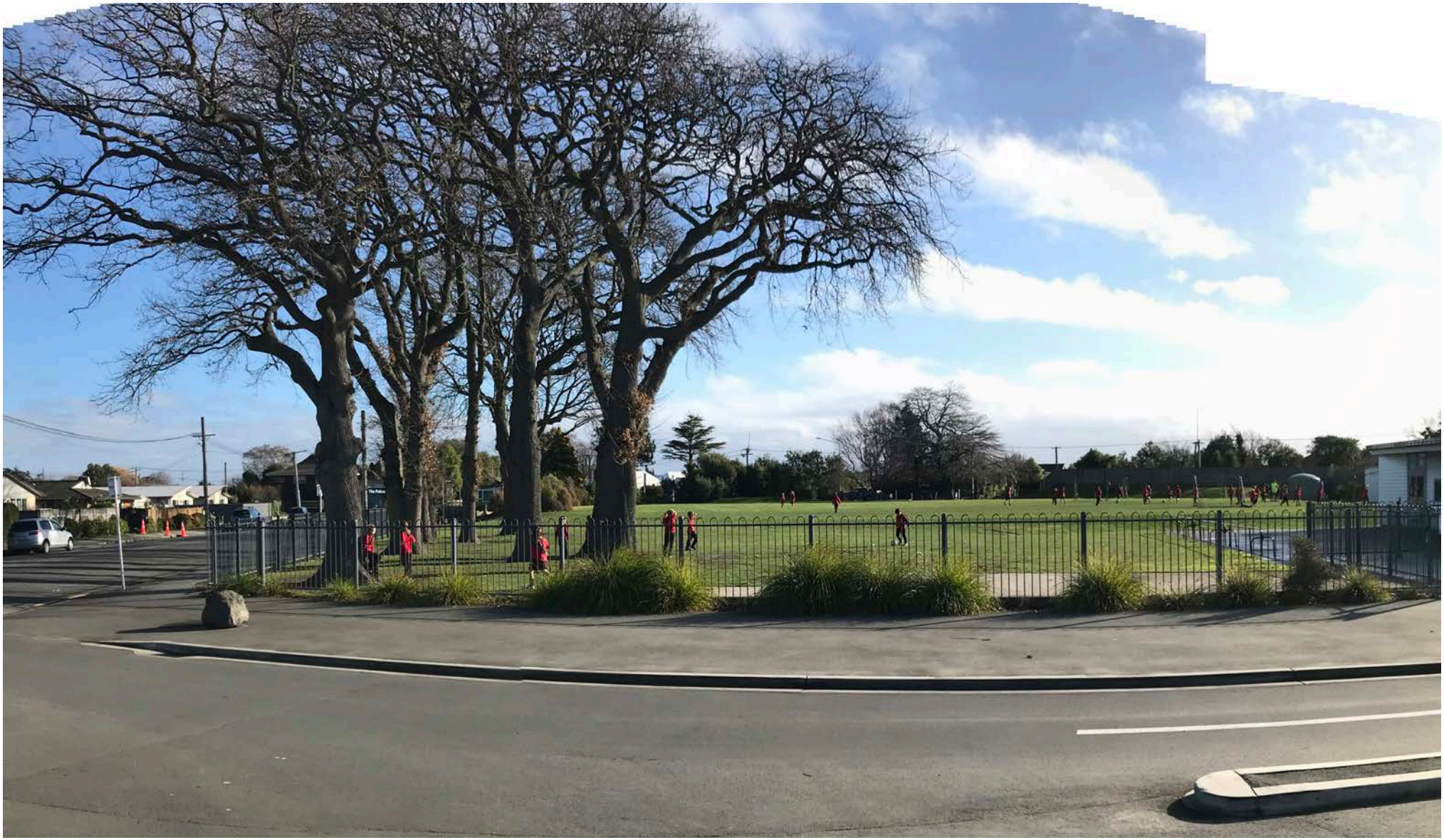
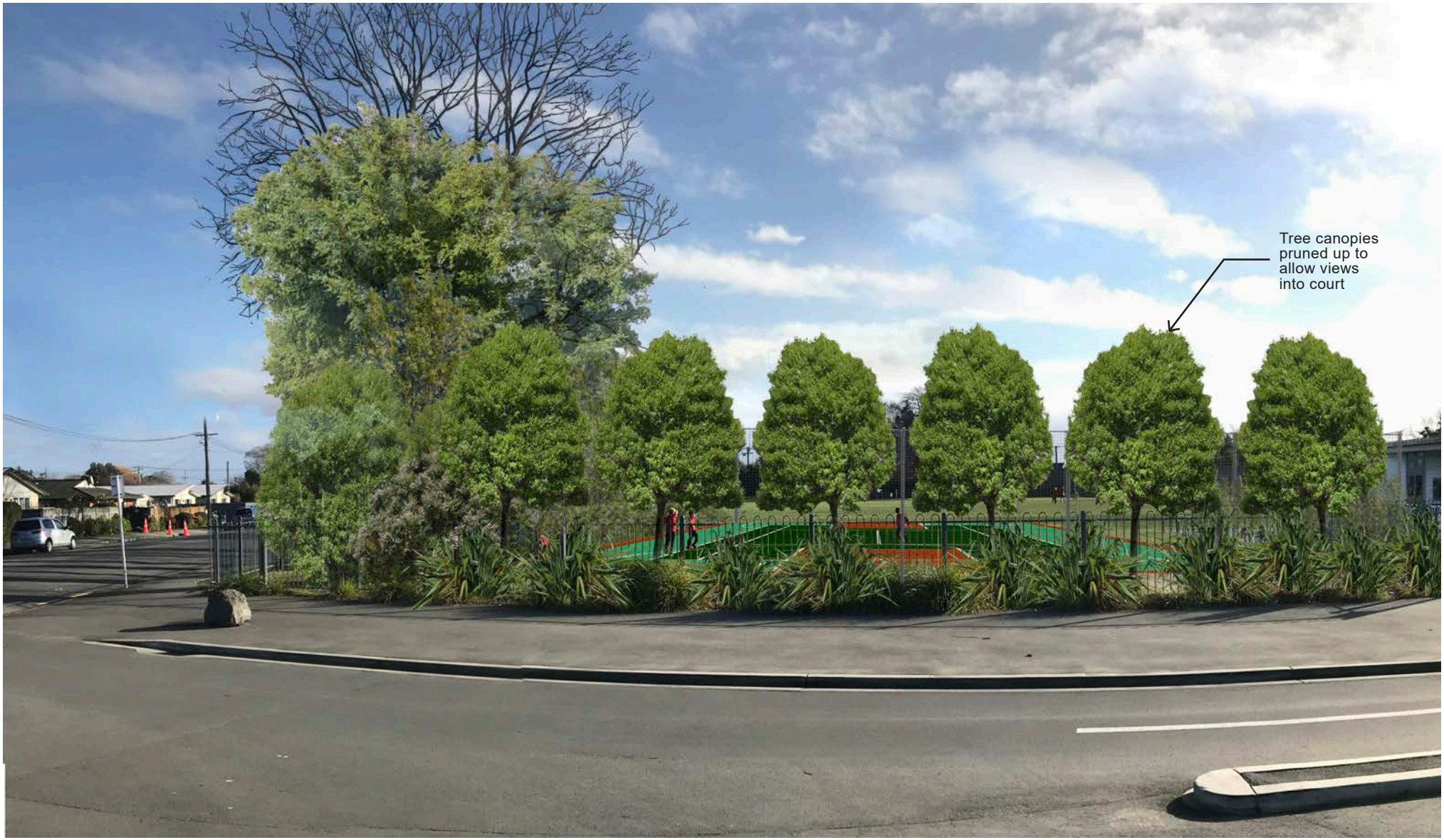
EXISTING SITE



PROPOSED ALL WEATHER COURT - ARTIST IMPRESSION



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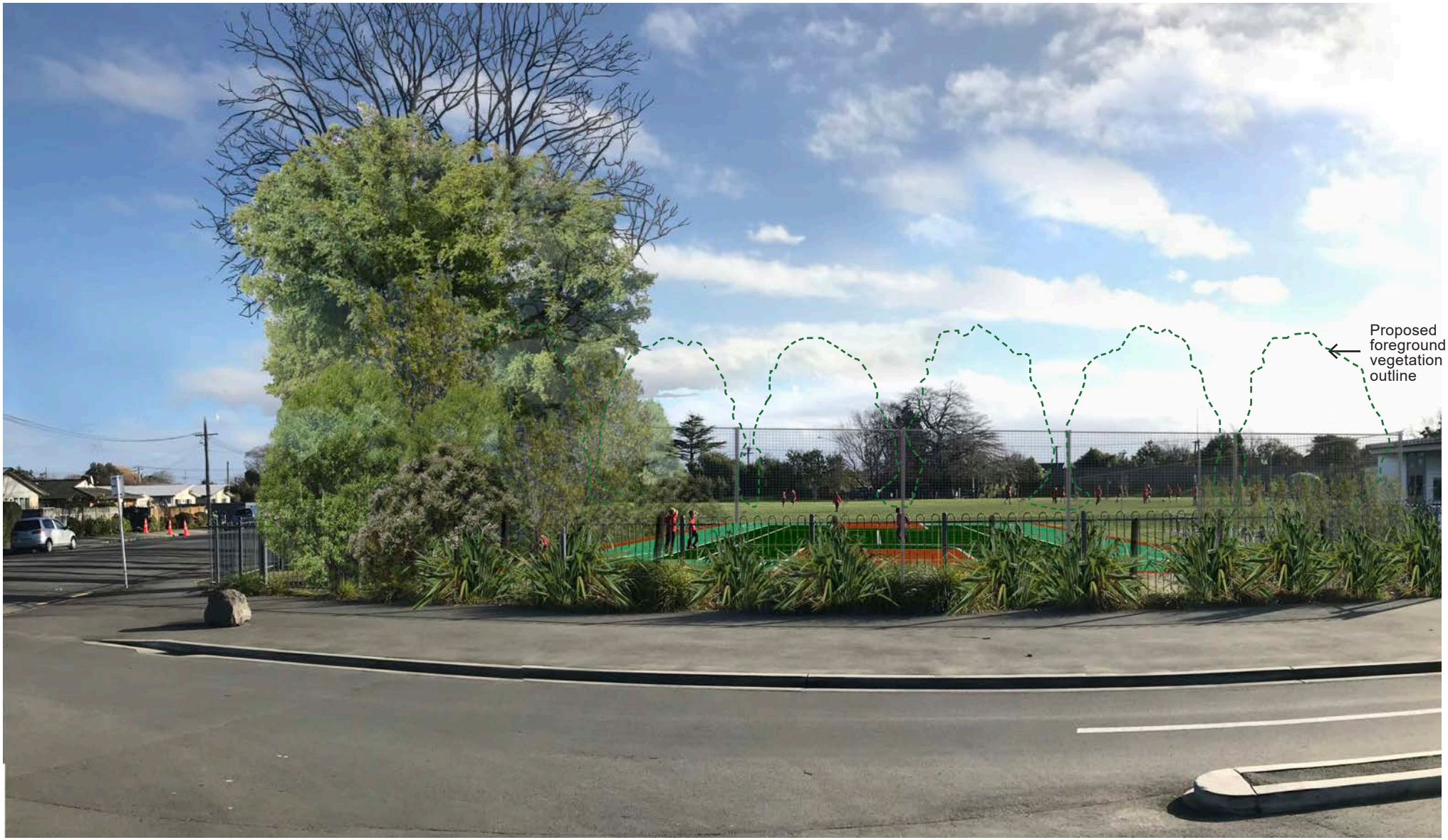


PROPOSED PLANT PALETTE

Mikimiki

Coprosma propinqua

Green Ake Ake

Dodonaea viscosa

Houhi puruhi - Lacebark

Hoheria angustifolia

Ngaio

Myoporum laetum

Kaikōmako - Bellbird Tree

Pennantia corymbosa

Tarata - Lemonwood

Pittosporum eugenoides

Tōtara

Podocarpus totara

Horoeka - Lancewood

Pseudopanax crassifolia

Whauwhaupaku - Five Finger

Pseudopanax arboreus

Kōwhai

Sophora microphylla

Dwarf Kōwhai

Sophora prostrata

Dwarf Toe toe

Chionochloa flavicans

Red Tussock

Chionochloa rubra

Puawhananga - NZ Clematis

Clematis paniculata

Following the school policy to prioritise indigenous plantings this palette builds on the native templates established in earlier planting projects elsewhere in the school grounds.

Additional species maybe incorporated for increased biodiversity and educational values.

OPTIONS ASSESSMENT

To assist in the decision making process we have summarised six general criteria to consider each of the options against. Commentary is given on based on both short term immediate impacts of redevelopment and long term impacts based around the possible scenarios at the 15-25+ year lifespan of the existing Oak trees.

Assessment Element	**Status Quo - Keep All Existing Trees**		**Install All Season Court**	
	Immediate Impact	*Long term impact (15-25yrs)*	*Immediate Impact*	*Long term impact (15-25yrs)*
Landscape Amenity	Neutral	Negative unless trees are replaced under a successional approach to ensure reasonable sized trees are established by at the end of the Oaks lifespans.	Highly negative due to loss of the 10 existing landmark trees.	Positive as proposed compensation planting including native specimen trees mature.
Indigenous Ecological values	Neutral - little to no indigenous ecological value in existing Oak trees set in mown grass.	Neutral to slightly positive if Oak trees are replaced with indigenous specimen trees in future as per current school policy.	Neutral to positive with introduction of variety of native plants that can attract native birds, insects and reptiles.	Highly positive as native planting matures and the planting is fully exploited by native birds, insects and reptiles.
Spatial Function	Neutral - space is low lying poorly drained and not highly used, particularly during wetter times of the year. Some limited play opportunities around the tree trunks and provides view to entry and down School Road.	Neutral - assuming space is maintained in current state with eventual replacement of Oaks with native specimen trees.	Positive - immediate use of court area to relieve pressure on other play areas in school and will be a valuable increase in year round usable space to support the growing school roll. General usage of the area is expected to increase significantly from the existing condition and will include after hours public use.	Highly Positive - as planting matures this will provide additional nature play and learning opportunities to complement the court activities. Ongoing positive impacts for both school and community through access to additional year round usable outdoor activity space.
Embodied Carbon Values (considering vegetation only), *https://www.unm.edu/~jbrink/365/Documents/Calculating_tree_carbon.pdf* *https://www.tanestrees.org.nz/resources/carbon-calculator/*	Neutral - based on an estimated average sequestered carbon value of 4.84 tons of carbon per tree the current 10 tree group contains approximately 48.64 Tons of CO2. The Arbourst has found the trees are in senescence and will not likely grow much more. They are therefore are not expected to sequester significantly more carbon in their lifespan.	Negative - as trees enter decline at end of life the embodied carbon will start to be released unless the wood is utilized for along term uses that avoid decomposition or combustion. This could be partially offset with early successional replacement	Negative unless the Oak timber can be reused in a long lasting manner that avoids decomposition or combustion (see mitigation commentary). Retention of logs and stumps in-situ will slow the release of CO2 vs. chipping or use as firewood.	Neutral to slightly Positive - an indigenous planting with 720 plants based on of 25% trees to 75% shrubs ratio over 20 years will sequester approx 48.6 tons of CO2. After 50 years this could reach 159 tons. At a 1m average spacing the proposed planting area of 630 sqm will accommodate this quantity of plants. Additional areas of planting is encouraged elsewhere in the school to shorten the required offset time.
Lifecycle and Operational Costs	Neutral - ongoing costs of mowing, weed control and seasonal removal of leaves	Neutral to negative with ongoing mowing and eventual tree removal	Neutral - reduced inputs from less mowing will be offset by increased weeding and periodic cleaning of court surface	Negative as turf surface nears end of life and requires replacement

NOTE: CARBON SEQUESTRATION CALCULATIONS ARE PROVIDED AS A HIGH LEVEL ESTIMATE ONLY AND INCLUDED FOR DISCUSSION PURPOSES ONLY. SEE WEB-LINKS NOTED FOR MORE INFORMATION .

SUMMARY

Based on the assessment matrix provided on the previous page the proposed all weather court development would inevitably result in a number of short term impacts, both negative and positive.

The negative impact of greatest concern will likely be the loss of the Oak 10 trees and the associated visual and heritage values to the school and wider community. This must be tempered with the Arbourist advice that the Oaks are approaching the end of their expected lifespans and consequently will still have to removed within a 15-25+yr time frame.

Not as immediately obvious, but also of importance as we move towards a low carbon society is the potential loss of the CO2 currently sequestered in the Oak trees.

From an arbouricultural perspective removal of the trees was not supported given the high value associated with these

On the positive side, the court development would be supported by MOE funds and provide immediate benefits in terms of additional all weather activity space for both the school and community to use.

When a longer term view is taken there are a greater number of positive aspects supporting the Court proposal as the status quo option of retaining the trees will still result in the unavoidable loss of the 10 Oaks due to natural end of life decline.

By this stage the native planting under the court proposal will be maturing and with appropriate management be positively contributing to the overall biodiversity of the school. Based on initial calculations by this stage the new planting will have largely replaced the embodied carbon currently stored in the Oaks and as the large native trees such as Totara continue to grow will continue to sequester CO2 and could significantly exceed that stored in the existing trees.

Mitigation & Enhancement Considerations

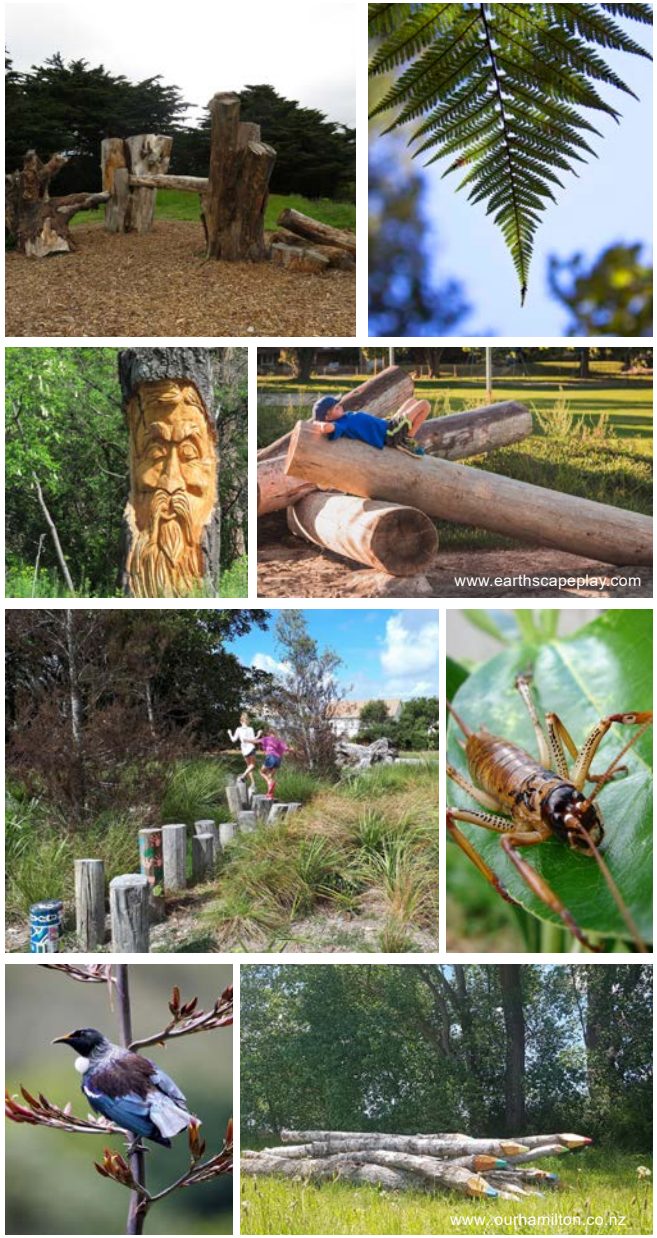
Which ever option the school community decides to proceed with, a number of enhancement recommendations are provided below to provide the best outcome under either scenario:

Status Quo - Preservation of Existing Oak trees.

- Establish mulched planting beds around existing oak trees out to drip lines to protect root systems and help maximise their lifespans.
- Add defined paths with stepping stones or gravel surfaces to allow play routes reinforced with rope and post barriers if necessary.
- Inter-plant with noble native specimen trees to allow for successional replacement trees for when the Oaks have to be eventually replaced.

All Season Court Installation

- At tree removal stage, for those outside of court construction zone retain stumps and standing trunks between 2 and 4 meters height for carving projects or habitat values.
- Reuse sections of trunk and logs as play elements within the school - both in the new planting area and in the wider grounds.
- Consider offering timber to local community sheds or craft organisations such as Rekindle.
- Preserve trunk cross section of largest tree as educational heritage element for school - count the tree rings to determine age.
- Retain excess excavated topsoil on-site and reuse for forming topographical features within planting areas.
- Collect acorns and grow seedlings a school project, these could be donated or sold for planting elsewhere in the community as a fund-raiser and way to recognise the legacy value of the trees.



CHARACTER IMAGES FOR DESIGN ELEMENTS AND VALUES THAT COULD BE INCORPORATED WITH COURT DEVELOPMENT

About Boffa Miskell

Boffa Miskell is a leading New Zealand professional services consultancy with offices in Auckland, Hamilton, Tauranga, Wellington, Christchurch, Dunedin and Queenstown. We work with a wide range of local and international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, cultural heritage, graphics and mapping. Over the past four decades we have built a reputation for professionalism, innovation and excellence. During this time we have been associated with a significant number of projects that have shaped New Zealand's environment.

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