

Subject: REVISION OF ROAD IMPROVEMENT STRATEGY

**To: Mayor and Councillors
Otorohanga District Council**

From: Chief Executive

Date: 22 January 2019

Relevant Community Outcomes

- Ensure services and facilities meet the needs of the Community
 - Promote the local economy and opportunities for sustainable economic development
 - The Otorohanga District is a safe place to live
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Executive Summary

Changes are proposed to the program of major improvement works to be conducted on the District's road network.

Staff Recommendation

It is recommended that Council resolves:

That public feedback is sought on a proposal to revise the form of Council's road improvement program to the following, effective from the 2019/20 financial year:

- Approximately \$200,000 per annum local share funding to be used for the progressive sealing of unsealed roads in the district, with works prioritised on the basis of both technical and economic (catchment rateable value) factors; and
- Approximately \$200,000 per annum local share funding to be used for the purpose of undertaking widening of sealed roads to meet applicable ONRC standards, with such widening works to be undertaken in conjunction with scheduled pavement renewal works on particular sections of road.

Discussion

The Otorohanga District has had a long history of well managed and progressive road improvements since the original establishment of the Otorohanga County Council in 1922.

An outline of this history from 1922 to 2005, previously prepared by Council's former Engineering Manager, Trevor Skilton, has been previously provided to Councillors.

Trevor identifies three distinct phases of major road improvements that have occurred since 1955, which together with ongoing more minor improvements have produced the road network that we see today. These phases were:

- A first phase from 1955 to 1971 during which 323km of previously unsealed roads were improved and sealed.
- A second phase from 1984 to 2004, which improved a further 271 km of unsealed roads, and sealed 146km of these.

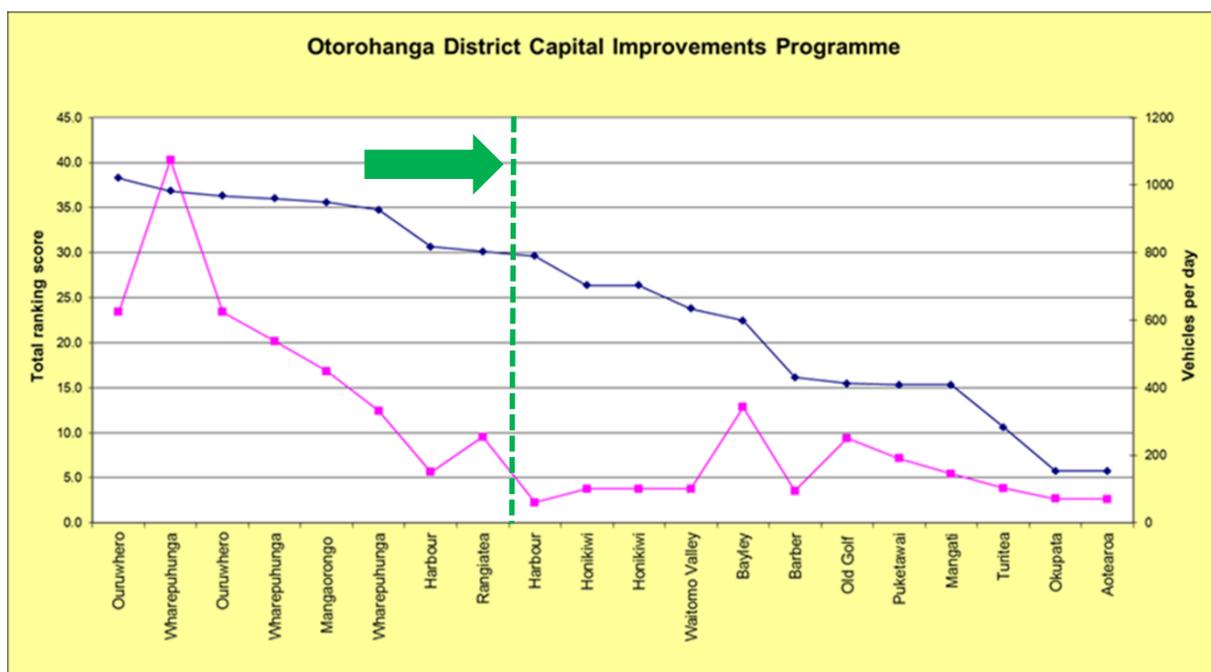
- A third phase since 2004 that has been mainly focussed on the smoothing (straightening) and widening of existing roads. Seal extensions ceased in 2009 following the withdrawal of NZTA subsidy for such works, and since that time the most of the improvements undertaken have been smoothing and widening of sealed roads.

Road improvements have remained a very significant element of Council's activity, and we have continued to work towards the delivery of a very comprehensive 'aspirational' program of major improvement works that was prepared many years ago, and most recently revised in 2009/10, that prioritised improvements based on a ranking that combined the following factors:

- Traffic volume
- Traffic growth
- Through or no-exit road?
- Availability of alternative routes
- Perceived level of general driver safety
- Level of maintenance needs
- Extent of previous preparation work done (ie previous pavement improvements in preparation for sealing)
- Milk tanker route ?
- School bus route?
- Tourist route ?
- Likely extent of other heavy vehicles
- School on route?
- Dust complaint history
- Potential to serve active development/growth area

The original program encompassed most of the roads in the District, including some with very low traffic volumes and without obvious severe defects that appeared to have been put on this program without any detailed consideration.

The smoothing and widening works of the third phase of the major improvement program have been prioritised based on technical factors considered to reflect need, but a point has now been reached, as shown on the green line on the figure below, where almost all of the high priority works in the existing program have been completed, and many of the remaining projects are on roads with traffic of less than 150 vehicles per day (VPD) which are not by any standards 'busy' roads.



This, combined with an absence of well-defined patterns of crashes or public complaints at particular locations makes it increasingly difficult to formulate appropriately targeted and justifiable plans for these types of improvement work on the roads of the District.

A further factor that does not support such works is a recent change to the funding policies of NZTA that reduces potential for subsidy of smoothing projects, creating the probability that at least 75% of overall project costs would have to be locally funded.

These matters together led to it being indicated in Council's 2018-28 Long Term Plan that a review would be undertaken of the road improvement strategy and program, and this is the subject of this report, which follows the recent workshop held with Councillors on this topic.

Road Capacity and Safety Issues

In 2007 an investigation was conducted of the potential need to improve the vehicle carrying capacity of roads in the District. This concluded that with the exception of three narrow winding roads on Pirongia Mountain that had been the target for significant subdivision, no such capacity improvements could be justified, and it is believed that this conclusion is still valid today.

This conclusion reflected what is believed to be fairly obvious from practical experience on local roads, which is that there is nothing approaching real traffic slowing congestion anywhere on our road network. Our roads are characterised by low traffic flows, where one can often drive significant distances without encountering other vehicles.

The frequency of serious crashes on ODC's local roads is low, and in recent times the incidence of serious accidents on the ODC road network has taken an increasing random nature, reflecting that in the large majority of cases (typically around 90%) incidents are not primarily dependent on road factors, and often occur on sections of road which are of a relatively high standard, and are simply due to driver error. It is therefore extremely difficult to predict where such incidents are likely to occur.

Whilst noting this difficulty of prediction, there are however some obvious factors that influence the probability of an accident that has a really serious or even fatal outcome, the most important of which is the likelihood that when the driver makes the error, that there is something substantial in very close proximity – typically either another vehicle or a large tree – that the driver's vehicle collides with.

A brief calculation suggests that if cars are driving on a typical ODC road which carries 200 vehicles per day, a vehicle travelling along that road may on average spend only 1% of their total travelling time within 150 metres of an oncoming vehicle.

If other things were considered as being equal this might be interpreted as meaning that if a driver of vehicle was to make an error that for example placed that vehicle into the oncoming lane on a random basis, there is only a 1 in 100 chance that an oncoming vehicle would be present in that lane to create the possibility of a head on collision.

This would be a very different situation to on a State Highway, such as SH3 which carried 5000 vehicles per day. Here a similar calculation would suggest that the probability of an oncoming vehicle being present in such a situation might be as high as 25%.

Furthermore the large number of vehicles travelling on the State Highway further compounds the likelihood that somebody will have such an accident on that road, suggesting that on this very theoretical basis the probability of a head-on collision occurring on a section of SH3 might be as much as 500 times higher than on a local 200 vehicle per day road. In this context the current emphasis of NZTA on installing median barriers on State Highways is understandable.

This theoretical low probability of multi-vehicle collisions on local roads is also reflected in the actual accident statistics, with such collisions on local roads being very rare, and almost never due to unsatisfactory road conditions.

This very low frequency of vehicle interactions on our local roads that might lead to the most severe crashes, combined with large extent of possible locations where such interactions could potentially occur does however make this issue one for which it is very difficult to find a cost-effective solution.

Road Improvement Costs

ODC spends very substantial amounts on road improvements, both major (generally based on the well-defined long term schedule of projects described previously) and minor (lesser works, such as sight benching and other small projects, that are typically undertaken on a more reactive basis).

The budgets currently allocated for road improvements in the first three years of the 2018-28 LTP are shown in the table below.

Description	2018/19	2019/20	2020/21	3 year total	Local share value
Minor improvements	\$514,354	\$580,659	\$462,459	\$1,557,472	\$654,138
Sealed Smoothing	\$672,676	\$694,075	\$787,852	\$2,154,603	\$2,154,603
Preventive maintenance	\$15,847	\$16,221	\$16,624	\$48,692	\$20,450
				Total local share	\$2,829,192

As previously noted, an important difference between the Minor Improvements and Major Works (Sealed Smoothing) categories is that the former is subsidised at 58%, whilst the latter is unsubsidised, making the 'local share' cost far greater.

By our Council's standards the amounts being spent on major works are very large. To put those numbers in context, consider that the total annual operating costs of the Swimming Pool Complex and Library Services – two activities to which Council has often paid much attention – are both around \$350,000 each.

No other Council activity has had such a relentless year-on-year expenditure on improvements.

It is suggested that if Council is to continue spending large amounts on further major improvements to our (generally already well regarded) roads, that very careful consideration needs to be given to what benefit is being obtained, and that Council is not just spending money for the sake of it.

Public Perceptions of Road Improvement Projects

The improvement projects that remain on the original program are offering decreasing levels of value to diminishing numbers of ratepayers, and it is also suspected that the public perceptions of those benefits to ratepayers are often not only of limited extent and localised, they may also be relatively temporary.

Except in a few cases where improvements are conducted to the most heavily trafficked and central of our roads - such as recent projects on Wharepuhunga, Rangiata and Ouruwhero Roads – it is likely that only a small proportion of ratepayers will become aware of or value those improvements.

These improvements have generally not been driven by active requests from ratepayers or other external parties - they have instead merely been enabled by a lack of ratepayer objection to them.

Similarly most of the improvement works undertaken have not been motivated by significant accident histories on that section of road, or by external pressures from the likes of the NZTA. No signals have been sent by parties such as NZTA or RATA that suggest our roads are inadequate or unsafe.

It is however recognised that many people question the practice of using previous accident history as a basis of prioritising road improvements, saying that improving the road only after an accident has occurred is a case of 'closing the door after the horse has bolted' and that a more proactive approach should be taken.

Such views do perhaps fail to recognise the difficulty that is attendant in identifying sections of roads where accidents are more likely to occur, and recent national vehicle accident statistics also suggest that traditional forms of road improvement such as smoothing or widening may not necessarily reduce serious accident rates beyond a certain point.

Maximising NZTA Subsidy

The maximisation of NZTA subsidy has in the past had a significant effect on determining the form of road improvements conducted in the District. The approach taken has in some cases arguably had a primary focus of getting as much physical work done as possible for the ratepayer dollar, with the road user benefits of the particular works perhaps being a secondary issue.

It has been previously suggested to Council that if maximising such 'bang for buck' in respect of physical works is the primary objective, that a revised approach could be adopted that takes advantage of the recent change in NZTA funding policy in respect of Minor Safety Improvements – now termed 'Low Cost, Low Risk' works. This new approach would focus on widening roads to the standards set in NZTA's 'One Network' road classification conducted in conjunction with pavement rehabilitation works, which would enable NZTA subsidy at 58% to be obtained on the majority of these costs.

This availability of subsidy would obviously result in this new form of improvement project yielding much greater – probably twice as much - 'bang for buck' in respect of the associated works that would be achievable with the type of smoothing improvements that were previously conducted.

This greater 'bang for buck' would offer options of doing more work using the same local budget as had been indicated previously, or doing a comparable or lesser amount of work for much lower cost.

A fundamental question that should however also be considered is whether this type of improvement work is warranted, even if only 42% or less of the cost had to be met locally.

As stated previously there is little to suggest that any real capacity issues on the ODC network, and there is as yet no mandatory requirement for roads to be constructed to the widths indicated in the 'One Network' Classification, and it appears very unlikely that these standards will become mandatory in the foreseeable future, because of the issues that this would create, since there are many roads throughout the country that do not meet those standards.

The primary reason that has been proposed for widening our roads is that it will make them more suitable for use by increasingly large heavy vehicles. Whilst it is recognised that vehicle numbers and sizes may have increased on some roads, the magnitude of these increases is however generally relatively small, and it not believed that this necessarily represents a clear trigger for initiation of road improvements.

A question that could be asked is how broadly spread is the benefit of having these larger vehicles on Council's local roads amongst ratepayers? Most of the very heavy vehicles coming through the Otorohanga District or serving the urban communities make use of the State Highways, not local roads.

The group of vehicles that might benefit most from a program of road widening is almost certainly dairy tankers, but the companies operating those vehicles, such as Fonterra, are not telling Council that our existing roads are inadequate.

Council's improvement of roads is not a 'one off' project, it is a continuing activity. At currently forecast levels of expenditure more than \$7 million – a figure in excess of the total external debt of Council at present – would be spent on major road improvements alone over a 10 year LTP period. Such expenditure is by Council standards big money – it equates to around \$100 per year per rateable property per year on average. Is it really worth spending this much to add an extra metre of width to some roads in the district?

Whilst it is appreciated that the balance of both roading Rates income and benefits of road widening are likely to be weighted towards rural ratepayers (ie rural people pay most, and therefore should get more benefit) this does not address the question of whether the work is economically justifiable. A dairy farmer's rates contribution towards road improvement works will be much greater than the ratepayer average, and the question still needs to be asked whether that farmer is obtaining sufficient benefit from those works to justify that cost.

As stated previously it seems unlikely that such improvements could be justified on the grounds of traffic safety based on the existing low accident rates on these roads. It also appears questionable whether the associated benefits to the local economy are sufficient to support these works.

The type of improvements being proposed may make the affected sections of road a little easier to drive, and may permit slightly higher vehicle speeds in a few places that result in a few seconds of travelling time being saved, but are those few seconds worth an ongoing expenditure of hundreds of thousands of dollars per year?. We are also in a time when a focus is increasingly being placed on lowering traffic speeds to reduce the potential for really serious or fatal accidents, and it is arguable that straightening sections of road enables higher speeds that are not in the overall interest of safety.

Seal Extensions

As noted previously, Council resolved to cease undertaking seal extensions in 2009, in response to NZTA withdrawing subsidy for such works.

That such subsidy was withdrawn almost certainly reflects the fact that NZTA believed that such improvements were generally not justifiable in terms of readily quantifiable cost/benefit.

Seal extensions have significant capital costs (probably around \$200,000 per km, most of which is associated with preparing the road for sealing, rather than the placement of the seal surface itself) and it is also now generally accepted that sealing a section of road typically results in a significant increase in long term costs (perhaps in the order of between \$3,000 and \$5,000 per kilometre per year) which may not be fully compensated for through the associated cost savings to road users if the road in question is only lightly trafficked.

That ODC ceased to undertake seal extensions after subsidy was withdrawn was an example of the previously described approach of seeking maximum 'bang for buck' in respect of physical works.

It is however recognised that even if the issue of the non-availability of NZTA subsidy for seal extensions was put aside, such works in our District would still have been difficult to justify in quantifiable cost/benefit terms because the roads in question have extremely low traffic volumes, nearly all 50 vehicles per day or less. This is reflected in the fact that in the 2009/10 long term program the seal extension with the highest assessed priority was only ranked 19th overall, and as such was unlikely to be completed within the next 10 years.

Despite seal extensions failing to rank highly when assessed against the previously adopted technical prioritisation criteria and probably being difficult to justify in quantifiable cost/benefit

terms it is however considered that there are factors which do perhaps warrant consideration of undertaking further such works.

It is strongly suspected that the sealing of a previously unsealed section of road is perceived by road users as being the most tangible and significant form of road improvement that can be made. A seal extension represents a fundamental change to the nature of the road that is likely to be seen as real progress towards higher levels of service, whereas most subsequent improvements, such as the smoothing and widening of sealed roads are probably seen as just being 'fine tuning'.

As such it is probable that the perceived (non-quantifiable) value to road users of seal extensions is very high, and that in terms of overall perceived benefit that this may to a significant degree counteract the fact that the number of users of such roads is very low.

In recent times Council has received few requests from ratepayers for improvements to rural roads, and this almost certainly reflects that fact that much of the District's road network has now been improved to a relatively high standard. A small exception to this has however been that there have been some continuing requests for Council to give consideration to seal extensions, and it is recognised that some property owners on unsealed roads at the eastern and western fringes of the district may feel that they have been forgotten.

These factors have previously led Councillors to indicate a willingness to consider reinstating a limited ongoing program of seal extensions, based on the believed value of such works in terms of rural ratepayer perceptions, rather than on robust cost/benefit analysis.

It is stressed that only a very modest progressive program of seal extensions is being suggested (perhaps at a rate of around 1 kilometre per year) and there should be no expectation that all of the unsealed roads in the District (of which there is currently 270km – approximately 34% of the total length of the District's road network) will be sealed in the foreseeable future.

This would be a similar approach to what has been adopted by a number of other rural local authorities, and one that recognises that a many of these unsealed roads are extremely little used.

Prioritising Seal Extensions

As has been previously discussed with Council, it is believed that when consideration is given to improvements on very low volume roads, another factor that should be taken account of in prioritising the various projects is the associated extent of local economic activity.

There are for example some unsealed roads that despite their relatively low traffic volumes serve a collection of properties that collectively have very high rateable value, and it would not appear unreasonable to give the sealing of these roads a higher priority than other unsealed roads that provide access to land with much lower rateable value, for example those roads which run through extensive areas of native bush.

It is therefore suggested that the prioritisation of roads for seal extensions should take account of both the traditional 'technical' criteria (as for example applied in development of the 2009/10 improvement program) and the level of economic activity on that road, as reflected by rateable value.

An initial attempt to rank roads on both technical and rateable value (and an overall combination of the two criteria) is presented in the table below, using the technical data on which the 2009/10 program was based, and current cumulative rateable values of properties served by particular unsealed roads.

Road	Rankings		
	Economic	Technical	Combined
Ranginui	1	1	1
Tauraroa	3	3	2
Huirimu	2	6	3
Mangati	9	2	4
Aotearoa	5	9	5
Hone	4	13	6
Owhiro	6	12	7
Newman	14	7	8
Okupata	10	11	9
Honikiwi	18	4	10
Te Raumoia	13	10	11
Te Raumauku	7	16	12
Kaimango	16	8	13
Raglan	20	5	14
Otoru	11	17	15
Owawenga	8	20	16
Te Oro	15	15	17
Hoddle	19	14	18
Tolley	12	21	19
Tapuae	17	18	20
Bonner	21	19	21

This analysis, whilst by no means precise (and no form of such prioritisation is ever likely to be completely comprehensive and reliable) does suggest that there is some degree of correlation between the two types of criteria, and that there are a few roads – in particular Ranginui, Tauraroa, Huirimu, Mangati and Aotearoa Roads – that appear to be strongly positioned as warranting the highest overall priorities for sealing.

Whilst recognising that some unsealed roads serve properties with greater rateable values than others, it should however also be noted that there are not any of these roads where the 'take' of Council rates for Land Transport from properties along that road are sufficient to fund the complete sealing of those roads within a relatively short period of time.

Even in the best case it appears that even if all the land transport rates taken off a particular unsealed road were used exclusively to fund the sealing of that road (without making any contribution to the cost of operating and maintaining other roads in the District) it would still take around 40 years to gather sufficient funds to seal all of that road.

As such the sealing of the remaining unsealed roads should not be considered as something that is 'owed' by Council to the property owners on those roads, as some have in the past suggested.

Proposed Approach – Future Major Road Improvements

As discussed previously, there does not appear to be strong justification on simple cost/benefit terms for any ongoing program of major road improvements, but it is however believed that a case can be made for some such improvements based on public perceptions.

It appears that the most appropriate form for such major ongoing road improvements would be seal extensions and/or widening of sealed roads (without smoothing). The justification for both

types of work is however constrained by the lack of apparent technical benefits, and in the case of seal extensions, the likely inability to obtain NZTA subsidy.

Because of this weakness of justification it is suggested that the previously indicated levels of local share expenditure on these works – upwards of \$700,000 per year – may not be appropriate, and that a more modest level of expenditure, perhaps around \$400,000 per year, should instead be considered.

A further factor that is considered to support reducing the overall extent of expenditure on road improvements is a decreasing level of competition for Council's physical works contracts. The numbers of tenders being received for such works has very substantially reduced (in a number of cases only 1 tender has been received) and where multiple tenders have been received the variability of prices has been large, but with the lowest received price still significantly exceeding the engineers estimate.

In such a situation it becomes difficult to be confident that good value is being obtained from these tenders, and that the contractor is not taking a relatively large profit margin. Whilst the tender process defines what the market price is for these works, it does not automatically follow that this is good value, and it would seem sensible to be cautious about the extent of non-essential construction contracts that are awarded whilst such conditions prevail.

It is therefore proposed that a suitable program of road major improvement works might be based upon local share funding of approximately \$200,000 per annum for seal extensions, and a further \$200,000 of local share funding (likely to provide around \$480,000 in total when NZTA subsidy is included) per year for widening of sealed roads to meet ONRC standards, with these works being carried out in conjunction with other scheduled pavement rehabilitation works.

An average annual local share expenditure of approximately \$200,000 per annum on seal extension works is probably sufficient to seal around 1km of road in typical circumstances. In the interests of maximising cost efficiency it may in some cases be desirable to consolidate such expenditure over 2 years to conduct a larger scale project on a particular road to achieve economies of scale.

A possible seal extension program for the next 10 years might therefore be as follows, recognising that:

- a) Ranginui Road appears to be the prime candidate for such an extension, based on both technical and economic criteria; and
- b) The different unsealed lengths of the roads in question.

2020/21 – Ranginui Road (\$400,000 – accumulated from 2019/20 and 20/21 years)

2021/22 – Tauraroa Valley (\$200,000)

2023/24 - Huirimu Road (\$400,000 – accumulated from 2022/23 and 23/24 years)

2024/25 – Mangati Road (\$200,000)

2026/27 – Aotearoa Road (\$400,000 – accumulated from 2025/26 and 26/27 years)

2028/29 – Ranginui Road (\$400,000 – accumulated from 2027/28 and 28/29 years)

It is stressed that such a program of particular roads is only a suggestion, that values are approximate and that further refinement may be required regarding which sections of road are to be sealed.

Some recent feedback from the NZTA suggests that they would be comfortable with this proposed approach, since their objectives in respect of local roads are increasingly focussed on sustainability, and a strong rehabilitation program is key to maintaining our roads in good condition.

The approach suggested above would also result in an overall reduction of expenditure from Council's roading account, which might be used to constrain rates increases and/or address other funding needs.

Decision Making

What is sought from Council at this point is a general decision on whether or not ODC's road improvement program should be changed away from the current focus on sealed road smoothing to a combination of seal extensions and sealed pavement widening conducted in conjunction with rehabilitation works. Whilst some potential targets for such seal extensions have been suggested, it is not believed that policy decisions should be based on them, and the selection of particular roads should come from an accepted prioritisation methodology, such as that suggested.

As stated previously there appears to have been limited public interest in ODC's road improvement program in recent times, but it is nevertheless believed that the proposed change is a significant one, and that as such the public should be provided with the opportunity to express their views on it.

For this reason it is suggested that it would be appropriate to undertake some limited public consultation on the proposal, through placement of notices as below in the press and on social media.

Dave Clibbery
CHIEF EXECUTIVE

Invitation for Public Feedback –

Proposed Revision of Road Improvement Program

Otorohanga District Council has a long history of progressively improving the local roads of the District. In recent times the focus of these improvement works has been on easing corners on sealed roads, but our roads have now been improved to the point where it has become difficult to justify further improvements of this type.

Council is therefore proposing to revise the form of its road improvement program, reducing overall expenditure and focussing its efforts on a combination of:

- a). Widening existing narrow sealed roads in conjunction with scheduled pavement reconstruction works; and*
- b). Reinstating a gradual program of sealing unsealed roads, prioritising these works based on a combination of technical and economic factors that are likely to favour sealing of roads that are busier and/or service areas of land with higher rateable values.*

Further details of the proposed approach are available from Council on request.

Council invites feedback on this proposal. Such feedback should be made in writing before 8 February 2019 and addressed to:

*The Chief Executive
Otorohanga District Council
PO Box 11
OTOROHANGA*