This document addresses questions regarding Guidelines and Specifications for Microsurfacing raised during a webinar broadcast in June 2018. The recording of the webinar can be accessed on the Austroads website.

Are there any limitations for the next seal after the microsurfacing treatment?
Generally no, however the specific surface conditions must be assessed on a case by case basis, as per all bituminous resurfacing

In terms of testing residual binder of the final mix, has there been consideration in using an Ignition oven to determine binder contents due to latex style polymers not dissolving in traditional methods stated?
It has been considered and may be included in a future update of the guidelines.

Is it common to perform multiple layers during construction, first layer more for rut correction then final layer for uniformity?
Yes, this is recommended good practice.

Does the corrector course require curing time prior to the placement of the wearing course?
Yes, as detailed in Section 7.4 of the Austroads Guidelines and Specifications for Microsurfacing report "Where multiple layers are required to be applied to achieve desired final surface levels, each separate layer should be allowed sufficient time to achieve final cure".

How many days we need to close the road after microsurfacing is completed?
The microsurfacing should be able to carry traffic within 60 minutes. Please refer to Section 7.5.5 of the Austroads report for more details.

Can it be used for bus lanes or cycle lanes on highly trafficked roads?
Yes, the Austroads report details that microsurfacing is appropriate for >3000 v/l/d.

Can it be applied as coloured surfacing?
Yes.

What is typical design life expected with microsurfacing? Is it similar to other seals?
This can vary considerably depending on why the microsurfacing has been selected, the service conditions, and existing road surface and pavement conditions. Microsurfacing is expected to provide a similar life span to other bituminous surfacings with the most common life expectancy related to binder oxidation process. Microsurfacing however applied as a maintenance application to existing pavements does rely on the underlying pavement integrity for its life expectancy.

How long does it last in a residential street?
As per above, microsurfacing is a maintenance application typically applied to sound existing pavements. Expected life is similar to other bituminous surfacings and is reliant on the underlying pavement integrity. The most common failure modes will be binder oxidation, and reflection of existing underlying cracking.
If there is no life cycle analysis, what is the typical design life for the surface?
As for the earlier question, this may vary considerably depending on why the microsurfacing has been selected, the service conditions, and existing road surface and pavement conditions.

How does one microsurfacing mix perform at low and high temperature? Do you think there should be two different specifications at low and high temperature? Also please give a range of low and high traffic volume applicable for microsurfacing.
Microsurfacing is applicable for low and high temperature applications. When paving microsurfacing, care must be taken that temperature conditions, both low and high, are suitable to allow spreading of the mixed materials and breaking of the emulsion.

Why is microsurfacing not applicable for low temperature areas?
Microsurfacing is applicable for low temperature areas, the discussion in the webinar was regarding avoiding excessively low temperatures for construction purposes.

Slide 22 - Can it be used for resolving bleeding seals in wheel paths.
A microsurfacing overlay will restore surface texture, however it may remain susceptible to reflecting flushing/bleeding if there is an excess of bitumen in the existing surface. A correction course applied to the flushed areas, such as dry matting techniques, before the microsurfacing is applied will assist in avoiding the reappearance of the excess binder.

Slide 26 - Can the mineral filler be sourced from recycled plastic products? Has any work been done in this space?
Technically this is possible, if the material complies to the required particle size distribution of the filler material in the specification. The combined material performance must also comply to the requirements of the design process. There has been no work done on development into using recycled or second use type materials for filler, and currently utilised materials are used in very low volumes and are very economical relative to the cost of such recycled processed materials.

Slide 26 - said you can put additives in to control flow, would something like A10E or A15E polymer be suitable?
A10E and A15E are polymer modified bitumens used as the binder in asphalt. The additives for microsurfacing are specific components of the mix used to control setting behaviour.

Slide 30 - Which organisation is permitted to carry out calibration of the plant?
Calibration is typically a process undertaken by the contractor. It is a verification to individual clients, verifying that metering controls can dose and provide individual component materials in proportioned ratio’s as per the mix design. The specification mandates that calibrations are to be confirmed prior to works commencing and sets periods for calibrations to be revised and renewed.

Slide 31 - How can you control the flow onto the kerb and gutter?
The paving box has defined edges for controlling location of the microsurfacing being placed, a hand squeegee can be used to lightly screed the edges to remove excess build up of material.

Is there any template to carry out a decision making (i.e. Life cycle costing analysis)?
The Austroads Guide to Asset Management provides a detailed suite of material for assessment, analysis and decision making.

Can this be applied to mastic pavement?
Microsurfacing can be applied to a range of pavements and existing surfacings. Section 7 of the Austroads report provides guidance for field applications.
Is there any suitable traffic volume for microsurfacing and speed limit of Road?
The Austroads report details that microsurfacing is appropriate for >3000 v/l/d. Considerations to existing traffic speed, surface texture and microsurfacing material size should be considered in regard to the required performance outcomes.

Does it actually improve the slip resistance characteristics or make it worse?
The type of microsurfacing should be selected depending on the requirements of the specific location. Larger sized microsurfacing will generally provide higher texture depth. Microsurfacing provides a unique macrotextured surface which can improve and restore skid resistance of wearing courses. It is known that microsurfacing can achieve similar skid resistance results to other bituminous surfacings.

Slide 41 - Frequency of sample is start, middle and end. Would you combine the three samples to perform the final compliance testing for aggregate grading and residual binder content
No, samples are retained separately, and labelled as per requirements of Section 7.2 in Sampling of Bituminous Slurry.

With the sampling of the slurry, how would you handle it? Would you spread it out and let it dry out before packing or would you package wet and have it break and cure full of water in the container?
As detailed in Section 6.2 of Sampling of Bituminous Slurry “Place the sample container on a flat, level surface and leave it with the lid off until the bituminous slurry has set. If required, decant residual water taking care to ensure that no binder or aggregate is lost. Seal the sample container with the lid.”

With sampling would you sample straight from the spread box or on the ground?
Section 6.2 of Sampling of Bituminous Slurry details samples should be taken from the outflow of the pugmill to the spreader box.

Slide 41 - Where is the best location on the machine to take the samples for compliance when using the ladle? Is it expected to take samples as the machine is moving on the run as you indicate start, middle and end of run?
Section 6.2 of Sampling of Bituminous Slurry details samples should be taken from the outflow of the pugmill to the spreader box.

Is there any data or history of how microsurfacing performs in flood-prone areas with frequent inundation? Is delamination a risk or is that more from installation issues? We have a such a road with some cracking that we would like to correct but are unsure about such issues as skid resistance or delamination under inundation. It sounds as if a correction course would be needed in any case. Flooding introduces extreme forces to roadways and can be expected to be damaging to many pavement and surfacing types.

What would be the critical factors to specify in looking for a treatment to deal with said inundated/cracked road?
Microsurfacing is a maintenance application designed to rehabilitate surface characteristics of sound pavements. Assuming the existing pavement and surfacing are sound, then microsurfacing could be a treatment option to rehabilitate surface characteristics such as shape, ride or surface texture. Any existing pavement failures should be investigated, as they may provide details on the existing conditions and ultimate suitability of future surfacing options.
Is applying a sprayed seal on top of a microsurfacing a suitable follow up treatment? Further, is applying crack sealing to reflective cracking coming through microsurfacing any impediment to follow up sprayed surfacing or further microsurfacing?

Sprayed seals may be applied over microsurfacing.

Section 7.1.4 of the Austroads report details that surface defects, including cracks, should be repaired at least 3 months, but preferably 12 months prior to the application of the microsurfacing to ensure curing of the repair work.

Are there any limitations for the next seal after the microsurfacing treatment?
Not as such. Details for preparation of existing surfaces for the application of a subsequent microsurfacing are detailed in Section 7.1 of the Austroads report.

In Australia or New Zealand, have there been any test track studies performed on roads with microsurfacing?
No formal research, however there is plenty of practical experience and application of microsurfacing in Australia. There is ongoing research being undertaken at the NCAT test facility in the USA, related to a number of pavement preservation treatments including crack sealing, microsurfacing and sprayed seals.

Are there any restrictions on the use of reclaimed asphalt pavement (RAP) as an aggregate in microsurfacing?
As detailed in Section 4.1 of the Austroads report, in general aggregates should meet the requirements listed in the model specification. However, if materials that do not conform to the specification are to be used, the onus is on the contractor to demonstrate fitness for purpose.

Would a roller help prevent excess material loss in the weeks after application?
Generally microsurfacing does not require rolling, however may be used in some circumstances, for instance when the newly laid microsurfacing does not receive traffic. Please see Section 7.5.6 of the Austroads report for more information on rolling.

We understand VicRoads uses microsurfacing to complement their standard spray seal treatments to improve ride and shape as well as overall pavement characteristics. Is there any data available on this?
VicRoads do use microsurfacing, however no studies have been published by them on the resultant attributes of the surfacing.

Any special consideration while using microsurfacing in Cape Seal?
Typically, microsurfacings can be used in cape seals as slurry traditionally has been. Consideration should be given to the potential to entrap volatiles in the seal, where cutter and or cutback binders have been used. To mitigate risk, strategies to minimise volatiles should be considered where microsurfacing will be used to cover a seal within a short time frame that does not allow the volatiles sufficient time to dissipate.

How does the microsurfacing conditions change with change in pavement type (i.e. rigid pavement and flexible pavement)?
As with all bituminous surfacings, the underlying pavement will affect the performance of the surface, and considerations of the conditions that will be required of it (i.e. suppressing the reflection of shrinkage cracking, or high levels of curvature) should be considered on a case by case basis.
Has any road agency developed a specification using this new information?
Not as yet, as the report was published only recently. However, state road jurisdictions have participated in the update of the document through the Austroads Pavement Task Force, and can now adopt it, or align current specifications to this published document.

Slide 39 - How long does it take (days) for the contractor to develop the mix and conduct testing in accordance with the spec?
Typically six weeks to obtain samples, check aggregate properties, and perform all required performance testing. Where designs are to be registered with state road jurisdictions, some additional time may be required to facilitate the registration process.

What is the minimum and maximum laying thickness of microsurfacing?
Typically the minimum thickness would be marginally larger than the largest aggregate particle size of the mix. Microsurfacing may be applied in layers up to 20 mm thick, however material can be applied in multiple layers to fill any required depth.

What is the end of life defect of microsurfacing and what remedial treatments are recommended?
Similarly to other bituminous surfacings, end of life defects may include loss of texture, cracking, ravelling, delaminations, etc. Microsurfacing can be overlayed or have enrichment/rejuvenation preservation treatments to extend initial life. Otherwise they can be treated similarly to other bituminous surfacings.