1. INTRODUCTION

This technical note is a follow up to and should be read in conjunction with Technical Note 22 RPS Future Model Update from 3V1003 to 3V1005 and Technical Note 23 Future Model Update from 3V1005 to 3V1007. It documents changes that have been introduced to the WRTM for the three step model version 3_V1010 and later. Note that at the time of publication only the three step model has been updated in accordance with the changes documented herein.

From 15th October 2012 the Version 10 future do-minimum models should be used for all new work not continuing from previous projects.

The primary reason for the upgrade was to incorporate the Franklin District area into the greater WRTM, as has recently been done for the base 2006 model (see Technical Note 24 Three Step Model Upgrade from 3V1007 to 3V1010). This upgrade is intended to better represent the interaction between the original WRTM area with the northern regions including Franklin.

As with the base year upgrade, the same 900 original WRTM zones were expanded to 999 zones which included 87 zones representing Franklin (zones 890-976) and 10 additional external zones (zones 979-988) representing the new external roads in and out of Franklin. The same method was also employed with importing and then stripping back the level of detail in the Franklin area so that the two areas were of comparable detail. All LASS agreed road network changes to the base that are present in the previous WRTM and Franklin future do-minimum models have been brought into the new WRTM future models. No further road network changes have been made.

The attraction factors used in the 2006 base year upgrade were carried forward to all future models. For the future models the number of jobs to be attracted to in Auckland were adjusted so that the same ratio was maintained of Auckland jobs to total jobs as was present in the new base model (1.3% of total jobs). This methodology is consistent with the previous version of the WRTM where the same ratio of external to total jobs was maintained for the future years.

Future land use was taken directly from the previous WRTM and Franklin future models. Franklin however had a 2051 modelled year, instead of 2041 as in the WRTM, so these were reduced by one third of the growth from 2021 (ie {2021-2041}/{2021-2051}). External flows and through traffic were maintained from before in all areas except north of the Bombay Hills where data taken from both the WRTM and Franklin models was amalgamated. External flows at Drury on SH1 and SH22 were later further adjusted so that the volume of traffic on SH1 closely matched that of the previous future models.

2. SUMMARY OF MODELS COMPARABILITY TO PREVIOUS

Both of the 2021 and 2041 WRTM models have been upgraded to include Franklin. Volumes in the upgraded models (3V1010) were compared to the previous version (3V1007) of the models and a summary of this comparison is provided below.

Volumes between versions 3V1007 and 3V1010 are most different to the north of Hamilton. External volumes at Drury and along SH1 north of the Bombay Hills were initially set as in the Franklin model, considering the one-hour vs two-hour model differences, but were later adjusted at Drury so volumes along SH1 best fit both previous models for each modelled year. Boundary conditions at the externals of the previous models had a significant impact on the flows along SH1 from Drury to just north of Hamilton in the old models, whereas in this upgrade the flows along SH1 are the result of interaction between Waikato and Franklin so should be more realistic. The volumes in 3V1010 are generally higher at the north of Hamilton than in 3V1007.

Volumes on the main roads in and out of the Franklin area are in general agreement with the old Franklin models, again considering the one-hour vs two-hour model differences and the reduced level of network detail. The largest difference would be on Paerata Rd (SH22) to the north of Pukekohe which has lower volumes but most of this is accounted for with more use of Sim Rd and Burtt Rd, as indicated from the traffic counts during validation.

At the north of Hamilton there are generally more vehicles on the route using the river crossing in the north near Hutchinson Rd but similar volumes on the Hamilton Expressway to the previous WRTM. Within Hamilton volumes are very similar on most links, including key links such as the Waikato River bridges, Wairere and Cobham Drives, Greenwood Street, Peacockes area, Ohaupo Road and Morrinsville Road (SH26). On Cambridge Road and further south the new and old models are much the same.

An assessment of economic benefits was carried out for three previously run project options and the resulting benefits compared to those attained in the original work. The project area was in the north of Hamilton and involved; 1) extending Resolution Dr to the Expressway, 2) option 1 extended through to Horsham Downs Rd, 3) option 2 with south facing ramps added. This area was chosen for this assessment as it is the part of the model that is most different to the previous version of the model and as such could be considered a "worst case scenario". Options 2 and 3 annual benefits compared extremely well, -1.3% and +1.4% respectively. Option 1 was +14.3% higher but there had been some concern over the values attained in the original work for this and the later value appears more as would be expected.

As expected there are differences in volumes between versions 3V1007 and 3V1010, principally on SH1 to the north of Hamilton. These differences can be attributed to the limited nature of the external volume generation in the old models (both WRTM and Franklin) and what should be a more accurate generation of volumes into the northern part of the upgraded future models. The volumes in the north are now the result of interaction between Waikato and Franklin as determined by future land use projections for the two areas rather than from assumed volumes at externals. There appears to be little difference between model versions in terms of attaining project economic benefits and is therefore considered that the new models should be comparable to previously run economic analyses.