Appendix III

Table 1: Recommended Changes to Schedule D – Explanation of Scope

Change	Type of Change	Related Submission	Reasons for Change	Related Evidence	Related Tables and Maps in the Schedule
Reviewing and revising the water quality standards	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to be more site specific, changes have been made to reflect existing water quality more appropriately using the best available science	Kate McArthur S42A Dr Barry Biggs S42A Dr John Quinn S42A Dr Bob Wilcock S42A Max Gibbs S42A Dr Rob Davies-Colley S42A	
Table D.19 and D.20 from the POP removed.	Result of submission	Rangitikei DC 346/112	Simplification of the standards to remove any potential double up in standards for rivers and streams flowing into lakes	Kate McArthur S42A Max Gibbs S42A	
Table D.18 and reference to "lowland" lakes water quality standards removed	Result of submission	Winstone Pulp 288/44 and Sustainable Whanganui 176/16	Simplification of the standards, removing standards from reservoirs and other water bodies which do not fit the Provisional Determination on Biodiversity (Table E.2(b) clauses iv to ix), protecting lakes not previously covered by proposed Table D.18 (Sustainable Whanganui), changes to reflect existing water quality of the Region's lakes more appropriately	Kate McArthur S42A	
Water quality standards for the marine coastal water bodies removed	Consequential	Moved to Schedule H as a result of coastal changes		Kate McArthur S42A Dr John Zeldis S42A	See Schedule H

Change	Type of Change	Related Submission	Reasons for Change	Related Evidence	Related Tables and Maps in the Schedule
Addition of new WMSzs to the tables and movement of the Mangaramarama to Tiraumea WMZ	Consequential	Changes proposed in Schedule Ba	Further division of the Manganui o te Ao sub-zones, addition of the Makara and Manakau sub-zones and movement of the Mangaramarama sub-zone from the Mangatainoka to the Tiraumea management zone.	Dr Jon Roygard S42A Raelene Hurndell S42A Maree Clark S42A	Table D.2a pages D-4 – D-12
BOD_5 changed to $sCBOD_5$ throughout the Schedule	Correcting an error		Soluble carbonaceous BOD is the most appropriate analyte to determine the potential effects of contaminants on sewage fungus growth. Previous Plans have used sCBOD5 (MCWQRP) but the definition of the form of BOD required by the standard was omitted in error from Schedule D	Dr John Quinn S42A Kate McArthur S42A Evidence of Keith Hamill and Paul Kennedy (WPI)	Standards Key Table D.2a
All units changed from mg/m^3 to g/m^3 throughout the Schedule	Consistency		In the Schedule some parameters were in mg/m^3 and some in g/m^3; g/m^3 was chosen as the preferred unit as it is consistent with laboratory reporting	Kate McArthur S42A	Table D.2a Standards Key
All headers where DO shows a 'less than' sign changed to a 'greater than' sign	Correct an error		The DO standard should be greater than the percentage saturation in the table, not less than	Kate McArthur S42A Dr Bob Wilcock S42A	Standards Key
All standards that had flow requirements in the POP Schedule D for three times median flow changed to apply at less than the 20th flow exceedence percentile	Result of submission	HRC 182/115	Flow exceedence percentiles are better statistics to use as they also provide some guidance as to the proportion of time over which the standard is relevant	Kate McArthur S42A Staff Submission Dr Barry Biggs S42A	Standards Key
All standards that had flow requirements in the POP for median flow changed to apply at less than the 50^{th} flow exceedence percentile	Consequential	To above	For consistency		Standards Key
<m (median flow) in the column headers of all tables replaced with < 50^{th} %ile	Consequential to above	HRC 182/115	As above	Kate McArthur S42 A	Standards Key
Ammonia in the Schedule changed to refer to Ammoniacal Nitrogen	Consequential to submissions	HRC 182/134	This is the correct term to use	Kate McArthur S42A Dr Bob Wilcock S42A	Standards Key, Table D.2a

Change	Type of Change	Related Submission	Reasons for Change	Related Evidence	Related Tables and Maps in the Schedule
Turbidity Standards removed from Schedule D	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately. Water clarity is the parameter of interest therefore water clarity should be the standard applied	Kate McArthur S42A Dr Rob Davies-Colley S42A Max Gibbs S42A	Standards Key Table D.2a,
Chla changed to Chl *a* throughout the Schedule	Correct an error		Correct naming	Kate McArthur S42 A	Table D.2a Standards Key
The toxicity < changed to % throughout the Schedule and added to the header of the tables	Correct an error also result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately. To ensure it fits with ANZECC guideline toxicity reference		Standards Key Table D.2a Table D.3a Table D.4a
Table D.1a Standards that apply to all River and Stream Waters in the Region added	Result of submission	Jill Strugnell 366/2	These are not new standards, just the additional water quality standards from page D-88 of the POP in tabular format for consistency and clarity	Maree Clark S42A	Table D.1a
Removal of the blue green algae toxin standard from the table	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately. National guidelines recommend lower toxin safety levels to those proposed in the Plan and strongly advise management via percent cover of potentially toxic species. We cannot manage the production of toxins, only the organisms which produce them.	Kate McArthur S42A	Table D.1a
Inclusion of a % cover standard of no more than 60% cover of diatoms/cyanobacteria more than 0.3 cm thick	Result of submission	Winstone Pulp 288/44	Better reflects actual periphyton guidelines from which standard was defined	Kate McArthur S42A Dr Barry Biggs S42A	Table D.1a
The Periphyton % Cover standard moved from Table D.17 and into Table D.1a; the word 'filamentous' added	Result of submission	Jill Strugnell 366/2	Because there is only one standard that applies to all water bodies in the Region this makes the Plan more user friendly	Maree Clark S42A	Table D.1a, Table D.2a

Change	Type of Change	Related Submission	Reasons for Change	Related Evidence	Related Tables and Maps in the Schedule
A 20% reduction standard for QMCI added with a footnote explaining this standard is only applicable to point source discharges	Result of submission	Winstone Pulp 288/44	POP application of the standard was difficult to apply and enforce. HRC is in agreement and made changes to make it more relevant, which were agreed through caucus	Kate McArthur S42A and supplementary evidence Dr John Quinn S42A Evidence of Paul Kennedy and Keith Hamill	Table D.1a
The sCBOD5 standard of 1 g/m^3 changed to 1.5g/m3 and shall only apply at flows less than the 20th percentile	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately – the 1 g/m3 standard is not able to be accurately measured via lab analysis so may not reflect whether the actual water quality meets the standard or not	Kate McArthur S42A Dr John Quinn S42A	Table D.2a
The 165mg/m^3 for the Mangaore changed to 0.167g/m^3	Correcting an error			Kate McArthur S42A	Table D.2a
The POM Standard changed to an average concentration of 5g/m^3 for all rivers in the Region and only applies when the flow in the river is equal to or less than the 50th flow exceedence percentile	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific: changes have been made to reflect existing water quality more appropriately – the 2.5 g/m3 POM standard is not able to be accurately measured via lab analysis so may not reflect whether the actual water quality meets the standard or not	Kate McArthur S42A Dr John Quinn S42A	Table D.2a
The QMCI Standard changed to MCI with the addition of a footnote outlining the methodology for soft bottomed streams	Result of submission	Winstone Pulp 288/44 (body) PNCC241/112	As a result of review of Water Quality Standards by Keith Hamill on behalf of PNCC.	Kate McArthur S42A and supplementary evidence Dr John Quinn S42A Evidence of Paul Kennedy and Keith Hamill	Table D.2a

Change	Type of Change	Related Submission	Reasons for Change	Related Evidence	Related Tables and Maps in the Schedule
A MCI score of 100 has replaced the QMCI Standard of 5; and A MCI score of 120 has replaced the QMCI Standard of 6	Consequential to submission above	As above	As above	Kate McArthur S42A Dr John Quinn S42A	Table D2.a
Visual clarity (horizontal black disc) standards from Ausseil & Clark (2007c) Table 24 at flows less than median (50th percentile) inserted into Schedule D	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of Standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately (see removal of turbidity standard)	Kate McArthur S42A Dr Rob Davies-Colley S42a Ausseil and Clark (2007c)	Table D2.a
The word 'visual' added in front of all references to clarity as visual clarity is the attribute of the water in question	Result of expert agreement on clarity standards		Agreement, requested by Hearing Panel	End of Hearing report	
Standards for Trout Spawning tabulated	Result of submission	Jill Strugnell 366/2	These are not new standards, just a reformat of the additional water quality standards from page D-92 of the POP in tabular format for consistency and clarity	Maree Clark S42 A	Table D.3a
Standards for lake catchments tabulated	Result of submission	Jill Strugnell 366/2	These are not new standards ,just the reformat of additional water quality standards from page D-88 and D-89 of the POP in tabular format for consistency and clarity	Kate McArthur S42A Maree Clark S42 A	Table D.4a
A definition of lakes where water quality standards apply has been added that is consistent with the Provisional Determination on Biodiversity (Schedule E Table E.2(b) clauses iv to ix)	Consequential change	Biodiversity Provisional Determination	Consistency	Kate McArthur S42A	Table D.4a
Addition of deep and shallow lake definition and standards split out over these two lake categories	Consequential change	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately – some of these standards are less stringent than the proposed standards to reflect more effectively managing lakes in line with topography of the lakes and the existing water quality	Kate McArthur S42A Max Gibbs S42A	Table D.4a

Change	Type of Change	Related Submission	Reasons for Change	Related Evidence	Related Tables and Maps in the Schedule
pH, Temperature, dissolved oxygen, and $sCBOD_5$ standards removed from Lakes	Consequential change	As above	As above – these standards are not directly relevant to effectively managing lake water quality	Kate McArthur S42A Max Gibbs S42A	Table D.4a
Average and maximum algal biomass, annual average TP and TN standards specified for each lake type	Consequential change	As above	As above	Kate McArthur S42A Max Gibbs S42A	Table D.4a
Ammoniacal Nitrogen Standard only applies when lake pH exceeds 8.5	Consequential change	As above	As above	Kate McArthur S42A Max Gibbs S42A	Table D.4a
Removal of the Blue Green Algae toxin Standard from the table	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately. National guidelines recommend lower toxin safety levels to those proposed in the Plan and strongly advise management via percent cover of potentially toxic species. We cannot manage the production of toxins, only the organisms which produce them.	Kate McArthur S42A Max Gibbs S42A	Table D.4a
Euphotic Depth Standard added	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately	Kate McArthur S42A Dr Rob Davies-Colley S42 A	Table D.4a Standards Key
Standards Key contains the wording for each standard identified in Tables D.1a-D.4a. This is the original table D.16 with the addition of wording for other tables.	Result of submission	Jill Strugnell 366/2	Clarity and ease of use - this takes the original Table D.17 from the POP and adds the narratives for the other standards to it	Maree Clark S42 A	Standards Key
The words 'standards spelt out' changed to full wording of the standard	Result of submission	Jill Strugnell 366/2	Clarity and ease of use	Maree Clark S42 A	Standards Key

Change	Type of Change	Related Submission	Reasons for Change	Related Evidence	Related Tables and Maps in the Schedule
The words 'column header' in the Key changed to full wording of the standard	Result of submission	Jill Strugnell 366/2	Clarity and ease of use	Maree Clark S42 A	Standards Key
The word 'changed' replaced with 'reduced' in the visual clarity change explanation	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately. Changes which increase clarity are improvements and should not be precluded by the standards	Kate McArthur S42A Dr Rob Davies-Colley S42A	Standards Key
$sCBOD_5$ has had the words 'soluble carbonaceous biochemical oxygen demand' added (NB: biological has changed to biochemical)	Correcting an error		This is the correct term for the standard	Kate McArthur S42A Dr John Quinn S42A	Standards Key
$sCBOD_5$ has had a flow category added when the standard applies; the standard is now a monthly average	Result of submission	PNCC 241/48 PNCC 241/112 Rangitikei DC 346/112 Federated Farmers 426/39 Charlie Pedersen and others 101/2 Winstone Pulp 288/44	Revision of standards to best science and to be more site specific; changes have been made to reflect existing water quality more appropriately	Kate McArthur S42A Dr John Quinn S42A Evidence of Keith Hamill	Standards Key
Addition of a % change in QMCI Standard downstream narrative	Consequential to caucusing	Winstone Pulp 288/44 (body) PNCC 241/112	As a result of review of Water Quality Standards by Keith Hamill on behalf of PNCC; POP application of the standard was difficult to apply and enforce. HRC is in agreement and made changes to make it more relevant, which were agreed through caucus	Kate McArthur Supplementary report	Standards Key
Addition of the word 'Community' to the MCI and QMCI standard wording	Correcting an error		This term should have been included in the proposed version of the Plan		Standards Key

Change	Type of Change	Related Submission	Reasons for Change	Related Evidence	Related Tables and Maps in the Schedule
Addition of a statement for the SIN standard reading *unless natural levels exceed the standard*	Consequential change	Expert agreement after caucus Winstone Pulp and others about reflecting the existing water quality Winstone Pulp 288/44 (body) PNCC241/112	Evidence from Fonterra, Dairy NZ, Mike Scarsbrook, WPI, PNCC	Kate McArthur S42A and supplementary evidence Dr Barry Biggs Evidence of Paul Kennedy and Keith Hamill	Standards Key
The word 'Natural' removed throughout the Schedule	Consequential change	Panel Questions			