IN THE MATTER OF	the Resource Management Act 1991
AND	
IN THE MATTER OF	applications by Central Plains Water Trust to: Canterbury Regional Council for resource consents to take and use water from the Waimakariri and Rakaia Rivers and for all associated consents required for the construction and operation of the Central Plains Water Enhancement Scheme Selwyn District Council for resource consents to construct and operate the Central Plains Water Enhancement Scheme
AND	
IN THE MATTER OF	a notice of requirement by Central Plains Water Limited to: Selwyn District Council for the designation of land for works associated with the construction and operation of the Central Plains Water Enhancement Scheme

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ADDITIONAL EVIDENCE OF CHRISTOPHER RAYMOND GLASSON

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My full name is Christopher Raymond Glasson.

INTRODUCTION

1. I was requested to provide further information on the visual effects of the main CPW structures as they will appear in the landscape, including further photo simulations. From these simulations more definitive opinions can be given as to the potential effects caused by these structures. The structures include the intakes and sediment ponds on both the Waimakariri (upper and lower) and Rakaia Rivers, the canals as they traverse the river embankments, the dam structure at Coalgate, the main canal where it crosses Coal Track Road at Coalgate and the canal at the point it is siphoned under the Selwyn River. Fifteen 3-dimensional photo simulations are appended with a viewpoints plan. The preparation of these simulations was assisted by Morgan+Pollard Visual (simulations), Elliot Sinclair (surveyors) and URS provided engineering details of the structures.

METHOD OF 3D PHOTO SIMULATIONS

2. In undertaking these 3-dimensional photo simulations a considerable effort was made to make these impressions as accurate as possible from the data provided and with instruction from the various consultants. Photographic and survey information was obtained from site visits to all locations.

3. To achieve a photo simulation such as those provided in this evidence, a 3D model is rendered into a 2-dimensional photograph. A series of 3D computer cameras are then created within the simulation software. They are positioned accurately to the corresponding survey marked photo positions from which the photos are taken. The camera depicts a real world camera, including matching the focal length of a 50mm lens (this closely matches that of the human eye).

4. Markers will then positioned at the reference point co-ordinates. To duplicate the view through the real world camera, the reference markers and landform data are matched to their respective physical objects in the photo, thus ensuring an accurate horizontal and vertical alignment. The reference points consist of existing ground features in the environment such as power poles, light stands, signs, fence posts and/or prominent trees. The reference points are at varying heights and distances to the camera.

5. An image is then rendered containing the accurately positioned proposed CPW components overtop of the original photograph within the 3D simulation

software. Any vegetation in the foreground is then overlaid using photo-editing software. This is then checked against aerial photography from the site to ensure correct placement.

6. The final outcome I believe is that the simulations are a realistic portrayal of how the various components will appear as seen through a 50mm lens when viewed from the various viewpoint locations.

7. The photo simulations portray the landscape at a period of between 5 and 7 years following construction, although some locations are also portrayed at construction time. It should be noted that some existing vegetation shown in these photos, may actually be removed during construction. This could affect the visibility of structures in a minor way. For example, where the photos are taken looking across one of the rivers to a canal on the adjacent riverbank, there may be some vegetation in the canal path that has not been removed in the photo simulation. However, as there will still be, in real life, screening vegetation between the viewer and the structure I am satisfied these simulations are still realistic.

LOCATIONS

8. I have interpreted the commissioners' request as asking for simulations from the following locations:

   (a) Upper Waimakariri River, Intake and canal

   This view includes the diversion channel, intake structure, sediment trap, spillway flow control gate, fish screen and canal. Some of these structures will be at river level. This is the view that boaties, kayakers and people fishing will gain from the river, although it is a slightly higher view than if one was in the river due to our need to have a stable location on land for the photograph. As seen in the simulation, there are few obvious impacts created by the race and structures when viewed from the riverbed. The race embankment (northside) and low concrete structures are either fully or partially screened by riverbed scrub and weed growth for much of the length between the intake and the Kowhai River.

   Low Impact.

   (b) Upper Waimakariri River, Intake diversion canal from the South Bank

This is a view from the Taege visitor centre/café, adjacent to the true right embankment. This view includes the intake diversion channel intake, and will be experienced mainly by the property owners and tourist groups. Currently, the river flows in this location adjacent to the true right embankment. However, the change will be a more formalised structure in appearance somewhere between a natural large river braid and a permanent canal with precisely engineered embankments. At the point of access to the Taege property the canal will be 25m wide (approximately). From this viewpoint the modification will have a moderate impact and from a distance, it will be low.

(c) Lower Waimakariri River, intake structure

This is a close-up view of the lower intake structure west of the gorge bridge, taken from the river as experienced by recreationalists. There will be a localised visual impact caused by the addition of the intake structure. This will take the form of concrete panels above the intake, a pathway and platform descending the cliff face, with a gantry and small crane above the concrete structure. To make the concrete structures more recessive, exposed aggregate is proposed. I understand the gates and safety grill will be submerged.

Moderate to high impact at the site, low impact from a distance.

(d) Lower Waimakariri River, canal from the river

This view is taken from the river, east of the bridge. It is a view experienced by recreationalists. Currently the river is on the northern side of the riverbed. It must be noted that to take this photo we had to be on firm ground rather than from a boat, so the view from a boat would be a lower one and the CPW scheme would become be less prominent. The visual impact will be limited to the cut upper river embankment as the canal starts to make its climb. The impact will be at its worst at the time of construction when bare earth will be exposed, while after 5 to 7 years the native plants will have grown to merge together to give texture and a green colour to the embankment.

Low impact.

(e) Lower Waimakariri River, canal and pond from Waimakariri Gorge Road

This is an expansive view of the sediment pond and terrace race as it traverses the lower terrace and embankment. The viewpoint is on the southern river terrace adjacent to the road as it descends to the bridge. It is a fleeting view from the road when ascending the river terrace. This is an elevated view and the landscape of the lower terrace will become modified from a riverbed and pastoral scene to one with the formalised canal, and low concrete structures. The forestry woodlot will be removed as the terrace embankment is cut into as the race climbs the terrace. This will be replaced with native planting. Two simulations are shown – at the time of construction, and at 5 to 7years following planting.

Moderate Impact.

(f) Lower Waimakariri River, intake and canal from the gorge bridge

This view is from the northern approach to the gorge bridge, albeit some 2km distant from the nearest readily visible part of the works. It would be difficult to focus on the contents of this view due to the concentration travellers will have while either approaching the gorge bridge, or waiting to cross it, or travelling across it. This is a long distance view with the main impact being the change to the terrace embankment, at a distance of 3.5km from the bridge. This will be planted with native plants. The two simulations show the impact at the time of construction and 5 to 7years later. Low impact.

(g) Rakaia River, intake and diversion canal from the lookout point

This view is taken from the lookout point on the edge of the upper terrace of the true left embankment, before descending to the gorge bridge. It is the best public viewpoint of the river and the view is directly eastwards down the river. There is no viewpoint of the intake from the gorge bridge. From the viewpoint to the intake is a distance of 4km. Due to the viewing distance, details of the scheme will be difficult to discern from this viewpoint. The intake canal and the sediment pond will be the main changes which occur to the river when viewed from this point.

Low impact. Part of this view has been enlarged, so that the viewer can discern the scheme details.

(h) Rakaia River, diversion canal and terrace race from Highbank

As viewed from the river terrace above Highbank power station, this is an elevated and long distance view, of 4km to the intake structure and 5km to the start of the terrace race. Although not a well experienced public view it does give an expansive perspective of the Rakaia River section of the CPW scheme. The northern side of the river and terrace is best viewed during sunny afternoon conditions. The first part of the terrace race as it traverses the embankment will create the most obvious visual impact when viewed from this location. It will have most impact at construction time. With the advent of 5 to 7 years growth of native planting this impact will be reduced. Moderate impact at time of construction, low impact with plant growth.

(i) Rakaia River, intake and canal as viewed from the river

This view can be gained by recreationalists on the river, with the distance to the canal intake being 1.5km to 2km. The view is at a landing on the riverbed, therefore the view is at a slightly higher level than experienced from the river. It will be difficult to discern the south embankment of the canal race when viewed from the river due to its low height, horizontality and the presence of scrub which will screen the race and the low structures. Two simulations show the impact at time of construction (moderate) and 5 to 7 years following plant growth. (Low).

(j) Rakaia River, terrace race as viewed from the river

This is a view from the river as experienced by recreationalists. The view is from a gravel landing in the riverbed, therefore the view from a boat will be at a slightly lower level, thus reducing the potential impact. The cut embankment face will cause the most visual impact, especially at the time of construction, when viewed from this location. This will be manifested in the change of colour (brown) and texture (smooth) until the native plants start to have impact after 5 to 7 years growth. Similar impact to 3.9. Two simulations demonstrate these effects.

(k) The proposed dam, as viewed from the Coalgate Tavern

This is the closest and most public viewpoint of the proposed dam wall as it stretches across the Wainiwaniwa Valley. The viewing distance is 300m (approximately). Several viewpoint locations in this vicinity were considered appropriate, such as in front of the tavern and at the entrance to “Kirkstyle” farm. However, given the existing shelterbelts

and hedges and closer proximities to the dam restricting panoramic views, this was considered the most prominent public viewpoint. Currently there are limits to one's vision when looking in a northerly direction from the tavern or from the gate at "Kirkstyle". This is in the form of mature shelter belts and amenity trees. The proposed dam will be higher in its central part in comparison to existing trees, but the flanks of the dam will be at a comparable height to existing trees when viewed from this point. This is due to the horizontal curved shape of the dam with the central portion being closer to the tavern than its flanks. The visual impact will be at its most severe at the time of dam construction with the bare brown earth structure. This will gradually mellow with the advent of grass growth on the batter slopes. As referred to in my main evidence, exotic conifers and deciduous trees will be planted between Homebush Road and the proposed dam in an effort to replicate the existing planting and soften the dam structure over time. High impact, although diminishing to a moderate one with the passage of time due to the growth of foreground trees.

(l) The main canal crossing Homebush Road, east of Coalgate

This is a well-used road public and this structure will be the first component seen of the CPW scheme when travelling from Darfield to Coalgate/Glentunnel. The viewing distance is 100m. A horizontal element has been introduced into the landscape in the form of the canal structure with an approximate height of 3m. The main modification is the road incline to the top of the canal, close to the Tavern corner. The canal will be grassed which will relate to the surrounding pasture. Moderate impact for road users.

(m) Coalgate Township, Coal Track Road

The main canal passing under Coal Track Road as viewed from the west side of the canal, at a distance of 100m. This view, adjacent to the closest house site, portrays the canal as it passes under an elevated Coal Track Road. The viewers' limits to vision will become more restricted due to the presence of the canal. There is no background to the existing view other than a mid-ground of shelter and amenity trees. With the advent of the canal, the viewing distance is shortened as this mid-ground backdrop is removed. High impact.

(n) Coalgate Township, Coal Track Road

The main canal passing under Coal Track Road as viewed from the east side of the canal at a distance of 100m. This view, adjacent to farm buildings, portrays the canal as it passes under an elevated Coal Track Road. It is a similar visual impact to 3.13, except that there will be a background of mountains to the new view. This background will remain in view as a focal point even with the advent of the canal. High impact initially, reducing to moderate with the passage of time due to potential adjacent planting.

(o) Main canal at Selwyn River, Coalgate

This is a view of the main canal at the point where it is siphoned under the Selwyn River, south of Coalgate, and adjacent to the Coalgate to Hororata Road. The distance of this view, taken from the road is less than 100m. The view from the road to the east on entering and departing Coalgate will be modified with the presence of the canal (approximately 3m in height) after it has been siphoned under the Selwyn River. It will form a barrier to an existing expansive view. The view from the Selwyn River bridge looking up and down the river will remain unchanged because the canal is siphoned under it.

Low to moderate impact due to the fleeting nature of the view.

CPW SUPPLEMENT PRESENTED BY DI LUCAS LANDSCAPE ASSOCIATES

9. For completeness, I provide the following comments on the dam simulation at Coalgate provided by Di Lucas, as submitted on 26 June 2008.

- This appears to be a 2-dimensional simulation and not a 3-dimensional one which would have had levels taken by surveyors and undertaken using a programme like 3D Studio Max. In my view it is not a realistic or accurate simulation of the dam from this viewpoint.
- The view does not represent what would occur in reality as there is no vertical tapering of the flanks of the dam, due to the dam's horizontal curvature; and there is no incremental vertical tapering of the dams height which occurs when an object moves further away from the viewer, (i.e. each metre in height appears to be visually diminishing with an increasing height of the object). I therefore consider the dam would not appear as high from this viewpoint as the simulation indicates. It also does not show any light on the dam's batter slope even though it maybe facing south.

The dam will have a downstream face sloping at about 26° above the horizontal so in most daylight circumstances it will not be devoid of light.

Christopher Glasson