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Dunstan Peaks Ltd
Response to 34th Minute of Commissioners, prepared by Haidee McCabe

Introduction

1. The following is the response to the Commissioners' 34th Minute which sets out for each property the three irrigation activities set out in paragraph 5 and with the level of detail for each as prescribed by 6 (a) to (h). 6(h) matters are contained in the table attached and forming part of this response.

2. When reading this report, it is recommended that this is done in conjunction with the plans and photo documents referred to.

3. On the 24th -25th of January 2012, Irricon Resource Solutions carried out a series of flow gaugings in relation to consent activities (diverts, takes and discharges) and stream flows in order to gain a "snap-shot" of the Dunstan Peaks properties, fairly much under "normal" conditions in late summer. This information has been used for the "existing irrigation activities" divert, take and discharge figures, in each of the tables detailing flow rates.

4. Details of the flow gaugings are provided within the photo document, as photos were taken of each site at the time of gauging to better understand the environment. The gaugings are also represented in table format at the back of the photo document.

5. Given the detailed nature of this report, I have attached a concise summary table below. This contains only flowrate, annual volume and irrigation area which I consider are the core issues. This should ensure clarity of where the water has come from, to supply Clifton Downs. The key points are:

- No more area is being irrigated than currently consented and notified.

- The flow rate notified and used by existing irrigation activities will decrease dramatically under the current proposal.

- No more volume of water will be used than notified (and much less than existing irrigation activities) under the current proposal.

	Existing Area (ha)	Existing Flowrate (l/s)	Existing Volume (m^3)	Notified Area (ha)	Notified Flowrate (l/s)	Notified Volume (m^3)	Current Proposal Area (ha)	Current Proposal Flowrate (l/s)	Current Proposal Volume (m^3)
Twin Burn – Little Omarama	30	420	846,000	30	170	180,000	30	60	519,000
Twin Burn – Omarama Stream	77	276	1,669,000	115	350	690,000	56.5	0	0
Dunstan Peaks – Omarama Stream	112	112	290,000	170	290	1,020,000	50	35	300,000
Dunstan Peaks – Twaddles Creek	6.4	38	230,000	15	100	90,000*	24	17	144,000
Clifton Downs – Twaddles	16	45	unknown	12	45	72,000*	0	0	
Clifton Downs – Omarama Stream	0	0	0				181.5	125	1,089,000
Dunstan Peaks – Augmentation Race		50-150			150			150	
TOTAL	**241.4**	**1,041**	**3,035,000**	**342**	**1,105**	**2,052,000**	**342**	**387**	**2,052,000**

* Note: no volume was notified but 600mm/ha has been utilized which is consistent with the other volume notified and conservative.

TWINBURN STATION - EXISTING IRRIGATION ACTIVITIES:

Little Omarama Stream

1. Accompanying maps with all activities – See "Existing Irrigation" plan B for details.

2. Irrigation Methods: Border dyke irrigation

3. Location of all takes:

   - A diversion is located a map reference H40: 6346-1667 from Little Omarama Stream.

   Photo – Site 1A shows the diversion structure and stream earthworks. Site 1 is of Little Omarama Stream and Site 2 of the diverted flow just downstream of the diversion structure on the 24/1/2012

   - This water is then raced to a storage pond, where water is then taken at map reference H40: 6310-1683. The pond is estimated to store in the order of 6,000 cubic metres.

   Photo – Site 3 is of the take from the dam structure.

4. Description of intake structures and works in beds: The intake consists of two concrete wing-walls with a mechanically operated slide gate between the walls, located on the true left bank of Little Omarama Stream as shown in Photo Site 1A. The structure is approximately 2mtrs wide where the water enters the slide gate. This structure has been operating since1981.

5. **Works to maintain Structures (common to all sites):** Works to disturb the river bed and banks are required to facilitate the taking of water and remedial works to maintain the intake/divert structure. Complete re-construction of the structure is potentially required in the event of an exceptional flood. Works will involve re-directing the stream for a distance of less then 50mtrs should works need to occur where water is usually flowing into the structure. It may also involve re-directing the flow to the intake if the stream bed and flow alters during the course of a flood event and creating low embankments as shown in the photo below. Therefore works will be required in the river bed approximately 50mtrs upstream and downstream of the structure. Maintenance work would usually only take a matter of hours with a digger at the start of the irrigation season. If however, re-construction is required, this is more likely to take up to two days. It should be noted that this structure has operated now for 30 years and has never been affected by floods and only occasionally are any works required.

6. Area and location of land irrigated on each station: 30ha at Twinburn Station as shown on the attached plan B.

7. Location and nature of discharges: The discharge location is H40: 6165-1852 into the Omarama Stream below the Twinburn homestead, as shown in Photo – Site 4. The discharge is where a race merges into the old channel/depressions of Omarama Stream river bed. There is no physical structure.

8. Flowrate and annual volume for all takes and discharges.

Site	Flowrate (l/s)	Annual Volume (m3)
Diversion	60 l/s. During a fresh/high flow, 170l/s diverted	No recorder but estimate 60l/s for 24hrs/day (5,184m3) for 170 days per season = 881,280 m3
Take	420 l/s usually taken from the dam	No recorder but estimate 420l/s for 4hrs/day (6,048m3) for 160 days per season = 846,720 m3
Discharge	30 l/s gauged but upto170l/s	No recorder (or details to estimate)

Omarama Stream

9. Accompanying maps with all activities – See "Existing Irrigation" B plan for details

10. Irrigation Methods: Border dyke irrigation

11. Location of all takes:

    - A diversion is located a map reference H40: 6141-1588 from Omarama Stream.

    Photo – Site 5 is of Omarama Stream and Site 6 of the diverted flow as it comes into the diversion structure on the 24/1/2012

    - This water is then raced to a storage pond, where water is then taken at map reference H40: 6156-1619. The pond is estimated by store in the order of 20,000 cubic metres.

    Photo – Site 7 is of the take from the dam structure.

12. Description of intake structures and works in beds: The intake consists of two concrete wing-walls with a mechanically operated slide gate between the walls, located on the true right bank of Omarama Stream. Description of works is the same as in point 5 above and has therefore not been repeated

13. Area and location of land irrigated on each station: 77 ha at Twinburn Station as shown on the attached plan B.

14. Location and nature of discharges: H40: 6170-1810 into Omarama Stream below the Twinburn homestead as shown in Photo – Site 8. The discharge is where a race merges into the old channels of Omarama Stream. There is no physical structure.

15. Flowrate and annual volume for all takes and discharges

Site	Flowrate (l/s)	Annual Volume (m3)
Diversion	288 l/s During a fresh/high flow, 350l/s diverted	No recorder but estimate 280l/s for 24hrs/day (24,883m3) for 80 days per season = 1,990,640 m3
Take	276 l/s usually taken from the pond	No recorder but estimate 276l/s for 24hrs/day (23,846m3) for 70 days per season = 1,669,248 m3
Discharge	30 l/s gauged but upto170l/s	No recorder (or details to estimate)

TWINBURN STATION - ORIGINAL PROPOSAL AS NOTIFIED:

Little Omarama Stream

16. Accompanying maps with all activities – See "Original Proposal as Notified" plan C for details.

17. Irrigation Methods: Border dyke irrigation was identified, however the corresponding volume only provides for spray irrigation requirements.

18. Location of all takes:

    - A diversion is located a map reference H40: 635-166 from Little Omarama Stream.

    - The take is identified from an irrigation race at map reference H40: 635-166. Furthermore a take and use for stock and domestic water was also notified from H40: 628-183 9 (incorrect location).

19. Description of intake structures and works in beds: Consent to disturb the bed and banks at Little Omarama Stream to facilitate the taking of water and to carry out remedial works as required to maintain the diversion structure, at or about map reference H40: 635-166 (Little Omarama), H40: 613-159 (Omarama Stream) and H40: 615-177 (Omarama Stream).

20. Area and location of land irrigated on each station: 30ha at Twinburn Station

21. Location and nature of discharges: No discharge was notified. But details of the proposal to notification had always included a discharge at the existing location and there is an existing consent for this activity – CRC916230B

22. Flowrate and annual volume for all takes and discharges

Site	Flowrate (l/s)	Daily Volume (m3)	Annual Volume (m3)
Diversion	170 l/s	No volume	No volume
Take	170 l/s	4,896	180,000
Discharge	Not notified		

Omarama Stream

23. Accompanying maps with all activities – See "Original Proposal as Notified" plan C for details

24. Irrigation Methods: Border dyke irrigation was identified, however the corresponding volume only provides for that of spray irrigation.

25. Location of all takes: A diversion is located a map reference H40: 613-159 from Omarama Stream. The take is identified from an irrigation race at map reference H40: 613-159.

26. Description of intake structures and works in beds: Consent to disturb the bed and banks at Little Omarama Stream (incorrect stream name) to facilitate the taking of water and to carry out remedial works as required to maintain the diversion structure, at or about map reference H40: 635-166, H40: 613-159 (this map reference is the Omarama Stream take location but not diversion where it is required) and H40: 615-177.

27. Area and location of land irrigated on each station: 115ha at Twinburn Station

28. Location and nature of discharges: No discharge was notified.

29. Flowrate and annual volume for all takes and discharges

Site	Flowrate (l/s)	Daily Volume (m3)	Annual Volume (m3)
Diversion	350 l/s	18,900	No volume
Take	350 l/s	18,900	690,000
Discharge	Not notified		

TWINBURN STATION – CURRENT PROPOSAL:

Little Omarama Stream

30. Accompanying maps with all activities – See "Current Proposal – Irrigation Details" plan E and "Current Proposal – Command Areas" plan D for details

31. Irrigation Methods: Conversion to spray irrigation.

32. Location of all takes: A diversion is proposed to remain a map reference H40: 6346-1667 from Little Omarama Stream. This water is then raced to a storage pond, where water is then taken at map reference H40: 6310-1683.

33. Description of intake structures and works in beds: The existing intake structure will remain and be upgraded to meet fish screen and water metering requirements

34. Area and location of land irrigated on each station: 86.5ha shall be irrigated at Twinburn Station, within the command area (this now includes the area previously supplied by Omarama Stream – 30ha plus 56.5ha). This is likely to consist of a pivot irrigator (as shown in the current proposal detailed layout) along with K-Line or a hard hose gun to irrigate the remaining hectares. The exact location has not been shown as it depends on the final design and gravity available.

35. Location and nature of discharges: No discharge required

36. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Daily Volume (m3)**	**Annual Volume (m3)**
Diversion	60l/s	None proposed	519,000
Take	60l/s	None proposed	519,000
Discharge	Not required		

DUNSTAN PEAKS - EXISTING IRRIGATION ACTIVITIES:

Omarama Stream and Middle Gully

37. Accompanying maps with all activities – See "Existing Irrigation" plan B for details

38. Irrigation Methods: Border dykes, wild flood and spray irrigation

39. Location of all takes:

- A diversion and take is located a map reference H40: 6136-1752 from Omarama Stream.

  Photo – Site 9A shows the diversion structure and stream earthworks in Omarama Stream. Site 9 is of the diverted flow just downstream of the diversion structure on the 25/1/2012

- This race then merges with the Middle Gully diversion and take, at map reference H40: 6097-1851 to supply the border dykes and wild flood.

  Photo – Site 10 shows Middle Gully Stream upstream. Site 11 is of Middle Gully just upstream of the diversion and Site 11A is of the diversion/take point and structure on Middle Gully Stream.

40. Description of intake structures and works in beds: Omarama Stream: The intake consists of two concrete wing-walls with a mechanically operated slide gate between the walls, located on the true left bank of Omarama Stream. Description of works is the same as in point 5 above.

41. Middle Gully - The intake consists of concrete wing-walls with a mechanically operated slide gate between the walls, located either side of Middle Gully Stream. The structure is approximately 2mtrs wide where the water enters the slide gate. This structure has been operating since 1981. Effectively this structure shuts of Middle Gully stream entirely and diverts water either side to races. When the gate is open, Middle Gully Stream continues to flow through the concrete wing-walls.

42. Works to disturb the river bed of Middle Gully and its banks are required to facilitate the taking of water and remedial works to maintain the intake/divert structure. Description of works is the same as in point 5 above.

43. Area and location of land irrigated on each station:

    - 20ha of border dykes in Middle Gully, Dunstan Peaks
    - 44 ha of wild flood at Dunstan Peaks
    - 48 ha of spray irrigation in Middle Gully at Dunstan Peaks used historically

44. Location and nature of discharges: The discharge locations for the borders are between H40: 6122-1864 and H40:6127-1881. Basically the end of the borders discharging back into Middle Gully stream at a maximum rate of 310 l/s between these two points. There is no structure but the farm land merges into the natural depression of the stream.

45. The discharge from the wild flood system is into the augmentation race which effectively discharges into the Twaddles Creek discharge at map reference H40:607-201. Photo 12 shows the amalgamated discharge into Middle Gully

46. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Annual Volume (m3)**
Divert/Take from Omarama Stream	107 l/s. During a fresh/high flow, 290l/s diverted	No recorder but estimate 112 l/s for 24hrs/day (9,677m3) for 30 days per season = 290,310 m3
Divert/Take from Middle Gully	5 l/s, sometime up to 20 l/s	
Discharge	40 l/s gauged but upto310l/s possible	No recorder (or details to estimate)

DUNSTAN PEAKS - ORIGINAL PROPOSAL AS NOTIFIED:

Omarama Stream and Middle Gully

47. Accompanying maps with all activities – See "Original Proposal as Notified" plan C for details

48. Irrigation Methods: Border dyke irrigation and an electricity generation consent

49. Location of all takes: A diversion and take is located a map reference H40: 615-177 from Omarama Stream. No consent was notified for the divert/take from Middle Gully for irrigation. A further consent was located to divert, take and use water for electricity generation at map reference H40:613-197 (incorrect location from historic usage)

50. Description of intake structures and works in beds: Consent to disturb the bed and banks at Little Omarama Stream to facilitate the taking of water and to carry out remedial works as required to maintain the diversion structure, at or about map reference H40: 635-166 (Little Omarama), H40: 613-159 (Omarama Stream) and H40: 615-177 (Omarama Stream).

51. Area and location of land irrigated on each station: 170 ha of border dykes at Dunstan Peaks.

52. Location and nature of discharges: No discharge was notified in relation to the existing border dyke discharge into Middle Gully or Twaddles Creek at the related diversion rates. However a discharge was notified for the power generation into Twaddles Creek at a maximum rate not exceeding 30 l/s at map references H40: 613-197 (incorrect location from historic usage).

53. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Daily Volume (m3)**	**Annual Volume (m3)**
Omarama Stream - Diversion/Take	290	11,185	1,020,000
Middle Gully - Diversion/Take	0	0	0
Divert/take for electricity generation	115	69,552	No volume
Discharge	30	69552	No volume

DUNSTAN PEAKS – CURRENT PROPOSAL:

Omarama Stream and Middle Gully

54. Accompanying maps with all activities – See "Current Proposal – Irrigation Details" plan E and "Current Proposal – Command Areas" plan D for details. Please note a centre pivot in Middle Gully is also being evaluated (hard hose gun shown), hence the need for command area until finalization of design on issuing of consent.

55. Irrigation Methods: Spray irrigation. The electricity generation consent was run from the bywash associated with border dyke which will no longer be possible from a spray operation. Electricity generation consent is no longer required.

56. Location of all takes: The existing divert/take location from Omarama Stream at H40: 6136-1752 is proposed to continue to be utitilsed to supply irrigation water to Middle Gully.

57. Description of intake structures and works in beds: The existing intake structure in Omarama Stream will remain and shall be upgraded to meet fish screen and water meter requirements.

58. Area and location of land irrigated on each station: Spray irrigation of 50 ha in Middle Gully at Dunstan Peaks.

59. Location and nature of discharges: No discharge will be required.

60. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Annual Volume (m3)**
Omarama Stream Diversion/Take	35	300,000
Discharge	No Discharge	

DUNSTAN PEAKS - EXISTING IRRIGATION ACTIVITIES:

Twaddles Creek

61. Accompanying maps with all activities – See "Existing Irrigation" plan B for details

62. Irrigation Methods: Border dyke irrigation.

63. Location of all takes:

- A diversion and take is located a map reference H40: 6029-1981 from Twaddles Creek (which is actually located on Clifton Downs).

Photo – Site 16A is of Twaddles Creek and the diversion structure and Site 16A of the diverted flow in the race on the 25/1/2012

64. Description of intake structures and works in beds: The intake consists of two concrete wing-walls with a mechanically operated slide gate between the walls, located on the true right bank of Twaddles Creek. Description of works is the same as in point 5 above

65. Area and location of land irrigated on each station: 6.4 ha of border dykes at Dunstan Peaks.

66. Location and nature of discharges: The discharge location from the borders is H40: 6073-2010. There is no structure and the race simply merges with Twaddles Creek

67. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Annual Volume (m3)**
Diversion/Take from Twaddles Creek	38 l/s During a fresh/high flow, 100 l/s diverted	No recorder but estimate 38l/s for 24hrs/day (3,283m3) for 70 days per season = 229,810 m3
Discharge	55 l/s gauged in conjunction with Augmentation race but upto100l/s	No recorder (or details to estimate)

DUNSTAN PEAKS – ORIGINAL PROPOSAL AS NOTIFIED:

Twaddles Creek

68. Accompanying maps with all activities – See "Original Proposal as Notified" plan C for details

69. Irrigation Methods: Border dyke irrigation

70. Location of all takes: A diversion and take was notified at map reference H40: 603-198 from Twaddles Creek.

71. Description of intake structures and works in beds: Consent to disturb the bed and banks at Twaddles Creek to facilitate the taking of water and to carry out remedial works as required to maintain the diversion structure, at or about map references H40: 603-198 and H40: 606-219

72. Area and location of land irrigated on each station: 15 ha of border dykes at Dunstan Peaks.

73. Location and nature of discharges: No discharge was notified.

74. Flowrate and annual volume for all takes and discharges

Site	Flowrate (l/s)	Daily Volume (m3)	Annual Volume (m3)
Twaddles Creek – Divert/take	100	8,640	None identified
No discharge notified			

DUNSTAN PEAKS – CURRENT PROPOSAL:

Twaddles Creek

75. Accompanying maps with all activities – See "Current Proposal – Irrigation Details" plan E and "Current Proposal – Command Areas" plan D for details

76. Irrigation Methods: Spray irrigation

77. Location of all takes: A diversion and take is proposed to remain at map reference H40: 6029-1981 from Twaddles Creek (which is actually located on Clifton Downs).

78. Description of intake structures and works in beds: The existing intake is proposed to be utilized and upgraded to be fish screened and a water meter installed.

79. Area and location of land irrigated on each station: 24 ha of spray irrigation at Dunstan Peaks. A portion of this may be located on Clifton Downs given the location of the boundary fence. However the command area identified provides enough area to enable 24ha to be irrigated solely on Dunstan Peaks, as some of the old wild flood area from Middle Gully is included.

80. Location and nature of discharges: No discharge is required.

81. Flowrate and annual volume for all takes and discharges

Site	Flowrate (l/s)	Daily Volume (m3)	Annual Volume (m3)
Twaddles Creek – Divert/take	17		144,000
Twaddles Creek – Discharge	None required		

DUNSTAN PEAKS - EXISTING IRRIGATION ACTIVITIES:

Augmentation Race

82. Accompanying maps with all activities – See "Existing Irrigation" plan B for details

83. Irrigation Methods: This is a water supply race only – no water is taken for irrigation purposes directly. However this augmentation race is used to enhance the flows and maintain minimum flows in the Omarama Stream from downstream of approximately Twin Peaks bridge. The reason the diversion occurs, because if the water is remains in Omarama Stream below where it is diverted, the stream simply disappears subsurface. Many activities are reliant on this augmentation race, from irrigators, community water supply and the instream aquatic values.

84. Location of all takes:

- A diversion is located a map reference H40: 6133-1920 from Middle Gully on Dunstan Peaks

  Photo – Site 13A is of Middle Gully Creek and the diversion structure and Site 13 of the diverted flow in the race on the 24/1/2012

85. Description of intake structures and works in beds: The intake consists of two concrete wing-walls with a mechanically operated slide gate between the walls, located on the true left bank of Middle Gully (adjacent Broken Hutt Rd at the Omarama Stream bridge). Description of works is the same as in point 5 above

86. Area and location of land irrigated on each station: There is no irrigation directly associated with this diversion.

87. Location and nature of discharges: The discharge location from the Augmentation race is H40: 6073-2010 which is on Clifton Downs. There is no structure but the race simply merges with Twaddles Creek as shown in Photo Site 14.

88. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Daily Volume (m3)**	**Annual Volume (m3)**
Divert	150	90,720	No volume
Discharge	150	90,720	No volume

DUNSTAN PEAKS – ORIGINAL PROPOSAL AS NOTIFIED:

Augmentation Race

89. Accompanying maps with all activities – See "Original Proposal as Notified" plan C for details

90. Irrigation Methods: This is a water supply race only – no water is taken for irrigation purposes directly.

91. Location of all takes: A diversion was notified at map reference H40: 614-192 from Middle Gully on Dunstan Peaks for water into an irrigation race.

92. Description of intake structures and works in beds: Consent to disturb the bed and banks at Middle Gully to facilitate the taking of water and to carry out remedial works as required to maintain the diversion structure, at or about map references H40: 606-183 and H40: 614-192.

93. Area and location of land irrigated on each station: There is no irrigation directly associated with this diversion.

94. Location and nature of discharges: The discharge was notified for unused water/surplus irrigation water into Twaddles Creek at a maximum rate not exceeding 150 l/s, and a volume not exceeding 90,270 cubic metres per week, at or about map reference H40: 607-201. There were no details of any structure.

95. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Daily Volume (m3)**	**Annual Volume (m3)**
Divert	150	90,720	No volume
Discharge	150	90,720	No volume

DUNSTAN PEAKS – CURRENT PROPOSAL:

Augmentation Race

96. Accompanying maps with all activities – See "Current Proposal – Irrigation Details" plan E and "Current Proposal – Command Areas" plan D for details

97. Irrigation Methods: This is a water supply race only – no water is taken for irrigation purposes directly.

98. Location of all takes: A diversion is proposed to remain at map reference H40: 6133-1920 from Middle Gully on Dunstan Peaks. However given there will be no border dyke by-wash from Middle Gully area at a discharge rate of up to 310 l/s (Omarama Stream

and Middle Gully combined), it is unlikely that 150 l/s is going to be available once conversion to spray in Middle Gully is completed.

99. Therefore it is proposed to have the ability to continue to divert from Middle Gully or Omarama Stream from a new location. This location is downstream of the Omarama Stream water currently supplying Middle Gully. The new intake is proposed to be located on Dunstan Peaks between map references H40: 6163-1866 and H40: 6139-1992. The new diversion location means the majority of water (other than 35 l/s still be to abstracted) remains in Omarama Stream (rather than being taken into Middle Gully and by-wash water being utilized) until it is then diverted over 1km further downstream

100. Description of intake structures and works in beds: The intake structure proposed to remain from Middle Gully will be upgraded to a water meter.

101. A completely new intake will be required for Omarama Stream which is proposed to be in the form of a buried gallery or a concrete wingwall as utilized on several of the existing intakes. This buried gallery will involve the burying of a slotted pipe within the riverbed, approximately 2 x 50mtrs in length and a maximum diameter of 500mm. The pipe is orientated on a 45% angle upstream, buried in flowing water and the river bed. The pipe will be buried 1mtr beneath bed level. The river bed will be disturbed for an area of approximately 60mtrs long x 10mtrs wide and 3 mtrs deep. This will be installed to meet fish screening requirements and a water meter installed.

102. If a concrete wingwall structure is used, this will be located on the bank of the stream and will disturb mainly the river banks for a length of approximately 5mtrs and only about 2 mtrs into the river bed.

103. Works to disturb the river bed and banks see 5 above.

104. Area and location of land irrigated on each station: There is no irrigation directly associated with this diversion.

105. Location and nature of discharges: The discharge location from the Augmentation race is H40: 6073-2010 which is actually located on Clifton Downs. There is no structure and the race will continue to merge with Twaddles Creek

106. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Daily Volume (m3)**	**Annual Volume (m3)**
Divert	150	90,720	No volume
Discharge	150	90,720	No volume

CLIFTON DOWNS - EXISTING IRRIGATION ACTIVITIES:

Twaddles Creek

107. Accompanying maps with all activities – See "Existing Irrigation" plan B for details

108. Irrigation Methods: Wild flood historically

109. Location of all takes: A diversion and take has historically been located at map reference H40: 606-219 from Twaddles Creek on Clifton Downs

110. Description of intake structures and works in beds:

- An old pipe remains in the bed of Twaddles Creek.

Photo – Site 17 shows the old remaining pipe at the Twaddles Creek site.

111. Area and location of land irrigated on each station: 16 ha of wild flood at Clifton Downs.

112. Location and nature of discharges: There is no discharge

113. Flowrate and annual volume for all takes and discharges

Site	**Flowrate (l/s)**	**Daily Volume (m3)**	**Annual Volume (m3)**
Twaddles Creek – Divert/take	45	3,888	No records
No discharge			

CLIFTON DOWNS – ORIGINAL PROPOSAL AS NOTIFIED:

Twaddles Creek

114. Accompanying maps with all activities – See "Original Proposal as Notified" plan C for details

115. Irrigation Methods: Border dyke irrigation

116. Location of all takes: A diversion and take was notified at map reference H40: 606-219 from Twaddles Creek on Clifton Downs

117. Description of intake structures and works in beds: Consent to disturb the bed and banks at Twaddles Creek to facilitate the taking of water and to carry out remedial works as required to maintain the diversion structure, at or about map references H40: 603-198 and H40: 606-219

118. Area and location of land irrigated on each station: 12 ha of border dykes at Clifton Downs.

119. Location and nature of discharges: No discharge was notified

120. Flowrate and annual volume for all takes and discharges

Site	Flowrate (l/s)	Daily Volume (m3)	Annual Volume (m3)
Twaddles Creek – Divert/take	45	3,888	No volume notified
No discharge notified			

CLIFTON DOWNS – CURRENT PROPOSAL:

Twaddles Creek changed to Omarama Stream

121. Accompanying maps with all activities – – See "Current Proposal – Irrigation Details" plan E and "Current Proposal – Command Areas" plan D for detail

122. Irrigation Methods: Spray irrigation

123. Location of all takes: The Twaddles Creek intake will no longer be required. The new intake is proposed to be located on Dunstan Peaks between map references H40: 6163-1866 and H40: 6139-1992. This will provide for the supply of water via gravity feed and will be a combined intake with the augmentation race.

124. Description of intake structures and works in beds: This has already been described in section 96-101 above as part of the new augmentation intake, which will be used in conjunction with the supply of water to the Clifton Downs irrigation area.

125. Area and location of land irrigated on each station: 181.5 ha of spray irrigation at Clifton Downs. This area includes the 12ha already consented for Clifton Downs, plus areas relocated from Twin Burn (58.5 ha) and Dunstan Peaks (111ha) that had previously been consented and given effect to.

126. Location and nature of discharges: No discharge is required.

127. Flowrate and annual volume for all takes and discharges

Site	Flowrate (l/s)	Daily Volume (m3)	Annual Volume (m3)
Omarama Stream – Divert/take	125		1,089,000
No discharge			