APPENDIX D

Water Permit Partial Transfer - Statement of Reasonable Use

Area where partial transfer is sought

The area for the proposed transfer is shown on Figure 1 and covers an area of approximately 3.78 hectares (ha) being the Sullivan Block.

All remaining parts of the Winstone Wheatsheaf Quarry are covered by the existing water permit CRC212834 or CRC213144.

Proposed portion of the consent to be retained and transferred

The application seeks to partially transfer the water permit CRC212834, to allow for water to be used for quarrying activities within those parts of the Sullivan Block extension area not currently within the scope of CRC212834 or CRC213144.

In practice, this water will be used for dust suppression along with vegetation establishment/rehabilitation associated with quarrying therefore meeting the requirements of Rule 11.5.39 of the LWRP with regards to gravel extraction (and ancillary activities).

The area where the water transfer is to apply is shown on Figure D.

As part of the AEE submitted with the applications for resource consent, Air Quality Consulting NZ has prepared an Air Quality Assessment which outlines how much water is needed to effectively suppress dust within the Sullivan Block expansion.

The AQA outlines in Section 6.4:

As water will be the primary mitigation tool that Winstones will implement to control dust at Wheatsheaf Quarry, it is important to understand that there is sufficient volume of water available. Wheatsheaf Quarry has a water take consent (CRC212834) that allows the following extraction of water:

- *Extraction of water from Bore M36/20476 at a rate not exceeding 8 L/s (equivalent to 691.2 m³/day);*
- *A volume not exceeding 5,439 m³ in 7-day period; and*
- *A volume not exceeding 41,728 m³ between 1 July and the following 30 June.*

Given that both the current aggregate extraction blocks (B-Block and C-Block) are each approximately the same size as the proposed Sullivan Block (~4 ha) and these operations will cease prior to the commencement of the Sullivan Block, no additional water is required. However, to determine whether there is adequate water within the limits of the current water allocation, an analysis of rainfall and evapotranspiration data from January 2020 to December 2023 was conducted. This meteorological data was obtained from NIWA's Lincoln monitoring site, which is the closest location to the proposed Sullivan Block. The analysis was based on the following criteria:

- *Dust suppression is not necessary on days when rainfall is equal to or greater than evapotranspiration.*
- *When rainfall exceeds evapotranspiration on a particular day, the excess rainfall is carried over to the next day's calculation (for one day only). This allows some residual surface moisture from the rainfall event to be accounted for the following day, but not for subsequent days.*
- *On days without rainfall, the amount of water required for dust suppression is calculated to offset the evaporation for that day.*

Based on the above, water consumption has been calculated based on 4.24 ha active working area for both the proposed extraction and rehabilitation activities at the Sullivan Block and the current cleanfill working face and stockpile area within Wheatsheaf quarry. Of this 4.24 ha, it has been estimated that the proposed Sullivan Block will have 2 ha of active

working area at any one time. This is considered a conservative approach given that the Sullivan Block will be extracted in small stages and all other non-active areas of the site will either be vegetated, covered with washed aggregates or stabilised therefore limiting the amount of water required for dust suppression.

Figure 10, Figure 11 and Figure 12 present the water consumption on a daily, weekly (7-day rolling average) and yearly (July to June), respectively for the entire site including the proposed Sullivan Block extension.

Table 7 presents the maximum, 99th percentiles and 95th percentiles on a daily and weekly basis for both the Sullivan Block and the entire site. In addition to the water needed for dust suppression, Winstones is proposing to establish plants around the bund which will also require water for irrigation. Based on 1000 m² of plantings and 30 mm of water per week to develop and maintain healthy plants, an additional 30 m³ of water is required per week at the proposed Sullivan Block on top of the water required for dust suppression.

Table 7 also presents the maximum annual water consumption for the Sullivan Block and the entire site, like with the daily and weekly calculations, the predicted water consumption below the current consented allowance for Wheatsheaf Quarry.

Alternatively the site could be operated with a mix of water and dust suppressants.

Table 7: Summary of Water Consumption

	Daily Water Consumption (m³/day)		Weekly Water Consumption (m³/7 day)		Annual Water Consumption (m³/year)	
	Sullivan Block (2 ha)	Entire Site (4.24 ha)	Sullivan Block (2 ha)	Entire Site (4.24 ha)	Sullivan Block (2 ha)	Entire Site (4.24 ha)
Maximum	170	360	910	1,929	16,752	35,514
99th Percentile	142	301	798	1,692	-	-
95th Percentile	116	246	719	1,523	-	-
Current Consented Allowance	**691.2**		**5,439**		**41,728**	

The modelled calculations for the Sullivan Block water consumption for dust suppression in m³/day gives a maximum consumption of 170 m³/day, with the 99th percentile and 95th percentile being 142 m³/day and 116 m³/day respectively, and provides weekly and annual consumption volumes.

The maximum active quarry area requiring water suppression proposed for the Sullivan Block extension at any one time is 2 ha while the area for which the partial transfer is proposed is approximately 3.78 ha.

In simple terms, Winstone still needs to have access to enough water for the balance of the site during the period when works are transitioning into the area of the transfer (including bund construction and vegetation of these within this area), and the demand for water across the entire 4.24 ha of active dust generating area has been considered on this basis.

As noted in the AQA, in addition to the water needed for dust suppression, Winstone is proposing to establish plants around the bund which will also require a small amount water for irrigation. Based on 1000 m² of plantings and 30 mm of water per week to develop and

maintain healthy plants, an additional 30 m^3 of water is required per week at the proposed Sullivan Block on top of the water required for dust suppression.

Accordingly, Winstone proposes to transfer 940 m^3 per week while works are occurring within the transfer area.

It would make sense for the partial transfer to only take effect once works commence within this area, and for it to cease once all activities within this area are complete and rehabilitation established, if this occurs before the expiry of the consents.

This would leave 4,499 m^3 per week on the balance of the site under a 'worst-case' scenario'– where the transfer has taken effect for the Sullivan Block.

Modelling figures further illustrating these scenarios are included in the AQA.

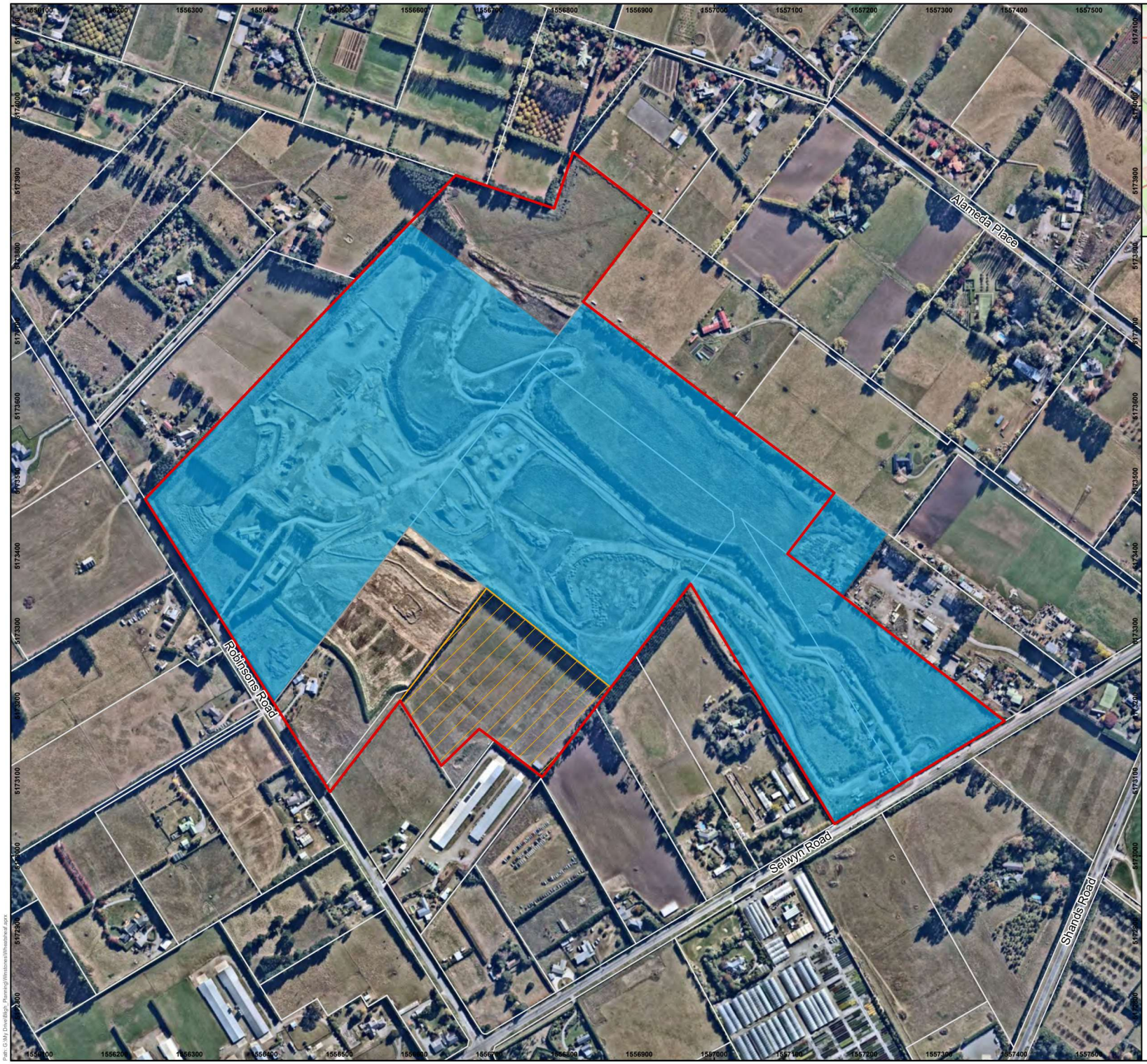
As noted by the AQA, to complement water demand at any time, dust suppressants could be used across either the transfer or existing site. Additional measures such as only working parts of the 3.63 ha in winter could also be used to further reduce the demand for water further.

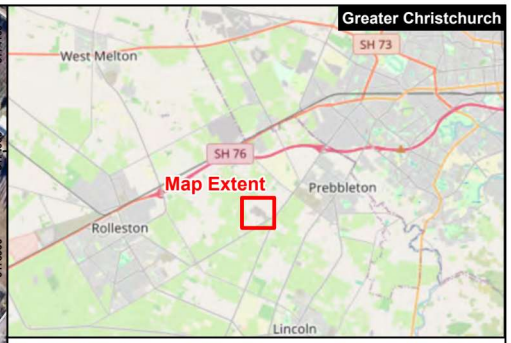
The following volumes are therefore proposed for the partial transfer:

	How much water is to be transferred?	**How much water is to be retained?**
Maximum Pumping rate (L/s)	Combined with CRC212834 and CRC213144 at a rate not exceeding 8 litres per second (no change from present)	Combined with CRC212834 and CRC213144 at a rate not exceeding 8 litres per second (no change from present)
Volume (m3) each return period	940 m^3 (per 7-day period) – approximately 17% of the total.	4,499 m^3 (per 7-day period)
Annual volume	Combined with CRC212834 and CRC213144 – to not exceed 41,728 cubic metres between 1 July and the following 30 June.	Combined with the new permit – to not exceed 41,728 cubic metres between 1 July and the following 30 June.

Please note, the 'reduced' retained volume only applies for the duration of works within the transfer area having effect.

Overall, there is no environmental effect associated with the proposed transfer as the maximum 'active quarry area' will not change regardless of the part of the Sullivan Block being worked, and the total existing authorised groundwater take volumes will not be exceeded at any time.





LEGEND

- Site Boundary
- Expansion Area - Sullivan Block
- Water Consented Area - CRC212834
- Parcel Boundary

NOTES

1. Aerial image: Nearmap WMTS
2. Map image: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA
nearmap.com:
3. Schematic only, not to be interpreted as an engineering design or construction drawing.
4. All areas and distances are indicative.

0 200 400
METRES

REFERENCE SCALE: 1:5,000 at A3.

PROJECTION: NZGD 2000 New Zealand Transverse Mercator

CLIENT

WINSTONE AGGREGATES WHEATSHEAF QUARRY

TITLE

SULLIVAN BLOCK
PARTIAL WATER TRANSFER APPLICATION AREA

BLIGH

YYYY-MM-DD	2024-07-02
PREPARED	AE
APPROVED	KB
REPORT	WHT
REV.	0

FIGURE **D**