

U # 23

To provide calculations behind Bilcon's GHG emissions estimate of 80,000 t

Greenhouse Gas (GHG) emissions were presented in Section 9.1.1.2, Volume VI of the EIS. As stated in the text, the operation at Whites Point Quarry comprises five different stages including: primary treatment, secondary treatment, fine crushing, the washing plant, and load out procedures. All five of these stages require a variety of equipment utilizing electric motors including such units as conveyor belts, screens, feeders, and pumps, which can require engine power within a wide range of approximately 10-300 horsepower (hp). Detailed power rating information for each stage was provided by Bilcon and used in the GHG emissions evaluation.

Assumptions used in calculating GHGs included:

- Equipment operated at 85 percent of its maximum power;
- Equipment was operational for 85 percent of the time to practically portray working conditions; and
- An emission factor was used to calculate Carbon Dioxide Equivalent (CO₂e) emissions (Reference: Nova Scotia Power, VCR Inc. 2000 Annual Report).

A breakdown of GHG emissions according to each operational stage is shown below.

Machine	Quantity	Engine Power (hp)	Power Usage of 85% (85% of the Time) (hp)	Power Usage of 85% (85% of the Time) (kWh)	CO₂e Produced (kg/hr)
Jaw	1	300	217	162	151
Feeder	1	75	54	40	38
Pecker	1	30	22	16	15
Oil lube system	1	10	7	5	5
Lighting	1	15	11	8	8
Miscellaneous	1	25	18	13	13
Take away belt	1	40	29	22	20
Stacker to screen	1	125	90	67	63
Screen #1	2	60	87	65	60
Conveyor to surge	1	75	54	40	38
Conveyor to shuttle	2	60	87	65	60
TOTAL					470

Machine	Quantity	Engine Power (hp)	Power Usage of 85% (85% of the Time) (hp)	Power Usage of 85% (85% of the Time) (kWh)	CO ₂ e Produced (kg/hr)
Tunnel Belt	1	75	54	40	38
Secondary	2	500	723	539	503
Conveyor to Screens	1	125	90	67	63
Conveyor to Secondary Surge	1	100	72	54	50
Conveyor to Stacker	2	60	87	65	60
Feeder in tunnel	4	40	116	86	80
Lighting miscellaneous	1	30	22	16	15
Conveyor to Tertiary Surge	1	100	72	54	50
Miscellaneous	10	100	723	539	503
Screen	4	120	347	259	241
TOTAL					1,604

Machine	Quantity	Engine Power (hp)	Power Usage of 85% (85% of the Time) (hp)	Power Usage of 85% (85% of the Time) (kWh)	CO ₂ e Produced (kg/hr)
Feeders in tunnel	4	40	116	86	80
Conveyor to feed box	1	100	72	54	50
Belt feeders to crushers	2	50	72	54	50
Crushers	4	1000	2890	2156	2,011
Controls, belt scales, misc.	2	100	145	108	101
TOTAL					2,293

Machine	Quantity	Engine Power (hp)	Power Usage of 85% (85% of the Time) (hp)	Power Usage of 85% (85% of the Time) (kWh)	CO ₂ e Produced (kg/hr)
Feeder in tunnel	4	40	116	86	80
Conveyor to Screens	1	100	72	54	50
Screen	4	160	462	345	322
Conveyor to Shuttle Belts	10	300	2168	1617	1,509
Stackers	6	450	1951	1455	1,358
Sand Screw	2	100	145	108	101
Dewater Screens	2	30	43	32	30
10x8 Pumps	2	100	145	108	101
Feed Water Pump	1	250	181	135	126
Make Water Pump	1	30	22	16	15
Lighting	1	60	43	32	30
Miscellaneous Controls Scale	1	60	43	32	30
TOTAL					3,751

Machine	Quantity	Engine Power (hp)	Power Usage of 85% (85% of the Time) (hp)	Power Usage of 85% (85% of the Time) (kWh)	CO ₂ e Produced (kg/hr)
Main tunnel	1	300	217	162	151
2nd tunnel	1	250	181	135	126
Shuttle	1	300	217	162	151
Loader	1	300	217	162	151
Bin belt	1	150	108	81	75
Bin controls	1	40	29	22	20
Belt feeder	6	100	434	323	302
Transverse	1	50	36	27	25
Lighting, miscellaneous control	1	200	145	108	101
TOTAL					1,101

The CO₂e emissions produced by three heavy diesel vehicles were also incorporated into the GHG determination for Whites Point Quarry operations. The values presented in Tables 1-5 and the CO₂e emissions resulting from the diesel vehicles are summarized in Table 6.

STAGE	CO ₂ e PRODUCED (kg/hr)	CO ₂ e PRODUCED (tonne/year)
PRIMARY	470	4,119
SECONDARY	1,604	14,052
FINE CRUSHING	2,293	20,088
WASHING PLANT	3,751	32,863
LOAD OUT	1,101	9,647
HEAVY DIESEL VEHICLES X3	114	997
TOTAL	9,220	81,765