Appendix F – Dust Impact Assessment Peer Review (ERM 2018) and Revised Dust Impact Assessment (GHD 2018)

ERM

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5 Ocotober 2018

Reference: 0477201

Dear Carmel

Subject: Talison Lithium – Dust impact assessment – peer review services

Environmental Resources Management Australia Pty Ltd (ERM) is pleased to provide this letter report to Talison Lithium (the 'Company') summarising the outcomes of our peer review of the GHD Report *Greenbushes Lithium Mine Expansion Dust Impact Assessment* dated July 2018 (the 'GHD Dust Assessment').

ERM understands that in order to inform EPA's assessment of Air Quality, they have requested that the Company provide a peer review of the GHD Dust Assessment Report by accredited experts in air quality and human health.

The following scope of work has been provided to meet this objective:

- Detailed review of the GHD Dust Assessment methodology and conclusions by ERM Partner and Certified Air Quality Practitioner (CAQP), Damon Roddis
- Detailed review of the GHD Dust Assessment methodology and conclusions by ERM Technical Director and Human Health Risk Assessment professional Ken Kiefer; and
- Provision of our findings within a brief peer review letter report suitable for submission to regulatory stakeholders and public review purposes (this document).

The following pages provide our specific review findings addressing the key aspects of the GHD approach, with commentary corresponding to key sections of the GHD Dust Assessment. Additionally, we have provided a summary of the overall peer review with regards to both air quality and health impact assessment.

Do not hesitate to contact the undersigned if you have queries on any aspect of the attached.

Yours sincerely,

Damon Roddis
Partner – Air Quality and Greenhouse
Certified Air Quality Professional (CAQP)
Certified Environmental Practitioner (CEnvP)

Ken Kiefer
Technical Director – Health Risk Assessment

1 Section 3: Emission sources

The main sources of particulate emissions are consistent with those expected from an open cut mining operation, such as drilling and blasting, excavating, dozing and materials transfer. Wheel generated dust and wind erosion are also large sources and have been appropriately quantified.

2 Section 4: Air quality criteria

2.1 Ambient air quality

The ambient air quality criteria used for TSP and PM_{10} are consistent with the relevant guidelines listed in Table 4-1 of the report. While it is not explicitly stated (except for dust deposition), it is assumed that these criteria are cumulative and not incremental. This should be clarified.

2.2 Health risk

The air quality criteria selected are adequately protective of air quality and acute and human health risks from airborne particulates.

3 Section 5: Existing environment

While not critical to the study outcomes, we note that the rainfall data as presented in Figure 5-2 is ambiguous. As it currently presented, it reads as though the maximum rainfall in July is approximately 325 mm, when clearly this is not the case when reading the text above it. It would be better to present the different coloured bar side by side to avoid this misinterpretation.

Particulate Matter (PM) monitoring is limited to a single high volume air sampler (HVAS) at the northern end of the site. Five years of available data are presented and these concentrations appear to be consistent with similar land use types, that is, generally around 15-30 µg/m^3 with occasional peaks above the 50 µg/m^3 24-hour average criterion.

These peaks are often due to regional effects such as bushfires or dust storms, which is also anticipated to be the case here. The maximum value of 37 µg/m^3 presented in Table 5-2 however, is not consistent with the data presented in Table 5-1, indicating a maximum of 117 µg/m^3. This should be reviewed.

4 Section 6: Meteorological modelling

Meteorological data for the assessment was provided by the on-site meteorological station (although the report does not show where this is located), and analysed to provide a file in the format to be used with the AERMOD dispersion model.

For other parameters required for AERMOD; albedo, Bowen ratio and surface roughness (Figure 6-1, 6-2 and 6-3), estimates were made based on the local land use and seasonal variations. These estimates seem within reasonable ranges.

Wind roses are presented for the modelling year (2015/2016), however, there is no long-term (5 years) analysis of winds which would allow a determination made as the representative nature of the chosen year.

ERM would recommend compiling similar wind roses for a period of five years (including the modelling year) to demonstrate that the 2015/2016 year used is representative of the area.

5 Section 7: Emissions estimation

Emissions from construction are not considered in the assessment. This is acceptable given that emissions from construction are short-lived and likely to be significantly less than ongoing operational emissions.

It is stated that 2028 represents the maximum year of activity, however, it would be useful to show some supporting information for the life of the project to demonstrate this.

Emission sources considered are appropriate, as are the PM control factors applied.

The emission factors used for this assessment have been drawn largely from the National Pollutant Inventory *Emission Estimation Technique Manual for Mining v3.1*.

It appears as though these factors have been used in an appropriate manner, however, without a detailed review of emission calculation spreadsheets it is not possible to confirm that all equations have been applied correctly.

Having said that, the annual totals presented in Table 7-3 appear consistent with the project and similar to open cut mining operations of similar throughputs.

It is not clear why there are no emissions (0.0 g/s) listed for the fine ore stockpile and the final product stockpile. This should be clarified.

It appears that the emission rates have been assumed to be constant throughout the year. Given the variable nature of emissions, due to such things as wind speed, it is suggested that variable emissions should have been used to try and represent this more realistically.

6 Section 8: Dispersion modelling

6.1 Ambient air quality

Section 8.3 indicates both discrete and gridded receptors have been used, however, there is no reference to gridded receptors in the AERMOD input file in Appendix A.

There is also no figure showing the locations of individual sources, which would help the reviewer in determining whether these were appropriately positioned.

The 70th percentile for 24-hour average PM_{10} has been used for background PM_{10} estimates but there is no discussion on the justification for this. The 90th percentile would potentially be more appropriate, however, ERM acknowledges that this is not likely to materially change the conclusions of the assessment.

There is no background estimate for TSP and so only incremental results are presented. An estimate of TSP could have been made from the PM_{10} monitoring results by determining a TSP:PM_{10} ratio using monitoring results from other similar sites.

This also applies to dust deposition as relationship between TSP and deposition can be inferred from other monitoring data sets at similar sites.

However, as the predicted incremental results are so low these levels are unlikely to exceed the cumulative criterion at any sensitive receptors.

6.2 Health risk

It is noted that the only results that exceed an adopted criteria are PM_{10} 1-hour 99.9th percentile incremental results for seven locations. The modelling for PM_{10} 1-hour 99.9th percentile was only completed for incremental and was not modelled for the cumulative impacts due to limitations in reliable data to account for existing background PM_{10} 1-hour 99.9th percentile levels.

While it may not be practical to model a cumulative result, the incremental results may underestimate risks from these types of acute exposure. When considering background levels, the cumulative impact may results in exceedance of the PM_{10} 1-hour 99.9th percentile criterion at more than seven locations. This uncertainty should be clearly stated in this section.

7 Section 9: Dust management

While there is uncertainty at the level at which modelling may underestimate acute exposures to PM_{10} at the 1-hour 99.9th percentile levels, these levels were identified as potential risk and management measures were included to address potential exceedances of the PM_{10} 1-hour 99.9th percentile criterion. The management recommendations include monitoring of PM_{10} (1 hour average), which would include cumulative dust impacts.

8 Section 10: Conclusion

The discussion of results is somewhat confusing as it oscillates between incremental and cumulative impacts. It is also not clearly explained what constitutes 'cumulative', whether it is the existing mine and other sources, or just the existing mine. This should be clearly defined.

The ambient air quality criteria are for cumulative impact, so presenting incremental results for TSP and comparing them to the criteria is not appropriate. The discussion notes that the existing mine is not included in the modelling. While this is an unconventional approach, the incremental results suggest that there are unlikely to be exceedances of the cumulative criteria. It is also noted that monitoring already exists near the closest sensitive receptors and is therefore able to characterise the PM_{10} concentrations in the area once the proposed expansion is operational.

It is noted that there may be additional excavation and re-mining of TSF1 from 2020 – 2024 but that this has not been included in the modelling. However, it also notes that the results presented in the report are indicative of a worst-case scenario. We suggest that a worst-case scenario would have been one between 2020 – 2024 and included emissions from the excavation of TSF1. It is not clear why this scenario was not assessed.

The incremental results look reasonable given the calculated total emissions presented in the report. However, more work should be done to robustly assess the cumulative impacts due to the existing mine and other local sources.

9 Summary of peer review findings

9.1 Air quality impacts

The assessment has adequately assessed incremental air quality impacts of dust emissions from the proposed expansion.

9.2 Human health impacts

The assessment has assessed potential acute and chronic health risks related to PM emissions. While there are uncertainties in the assessment around estimating potential acute health risks from PM_{10} at the 1-hour 99.9th percentile levels, this was identified as an issue for Dust Management to mitigate these potential health risks.

TALISON LITHIUM

Talison Lithium Australia Pty Ltd

Greenbushes Lithium Mine Expansion

Dust Impact Assessment

December 2018

GHD

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

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Abbreviations and glossary

Abbreviation	Term
AAQ NEPM	*National Environment Protection (Ambient Air Quality) Measure*
BoM	Bureau of Meteorology
BWIP	Building Wake Input Program
CGP	Chemical Grade Plant
DWER	Department of Water and Environmental Regulation
g/m^2/month	Grams per square metre per month
GHD	GHD Pty Ltd
Mtpa	Million tonnes per annum
NEPC	National Environment Protection Council
PM_{10}	Particulate matter with an aerodynamic diameter less than 10 micrometres
SEPP-AQM	*State Environment Protection Policy (Air Quality Management)*
SWWA	South-West Western Australia
TEOM	Tapered element oscillating microbalance
Talison	Talison Lithium Australia Pty Ltd
TGP	Technical Grade Plant
TSF	Tailings storage facility
TSP	Total suspended particulates
µg/m^3	Micrograms per cubic metre
WRL	Waste Rock Landform

1. Introduction

1.1 Project description

Talison Lithium Australia Pty Ltd (Talison) own and operate the Talison Greenbushes Lithium Mine (the Project), in Greenbushes, Western Australia. The mine is located within the Shire of Bridgetown – Greenbushes immediately south of the Greenbushes town site, approximately 250 km south of Perth and 80 km south-east of Bunbury in Western Australia (Figure 1-1).

Talison is proposing to expand the existing Project to increase the production of spodumene ore and lithium mineral concentrate from the operation. The expansion will increase throughput at the Mine from the current approved production rate of 4.7 Mtpa to 9.5 Mtpa of spodumene ore to produce up to 2.3 Mtpa of lithium mineral concentrate. The approved boundary for the mining operation (Mine Development Envelope) will expand from the current 1591 ha area to 1989 ha.

This Dust Impact Assessment has been undertaken to support environmental approval applications for the proposed expansion under Parts IV and V of the WA *Environmental Protection Act 1986* (EP Act) and the *Mining Act 1978*.

Figure 1-1 Location of Talison Greenbushes Lithium Mine, Western Australia

1.2 Scope of works

GHD Pty Ltd (GHD) was commissioned by Talison to quantify current dust impacts and develop an air dispersion model. The scope of works for the dust impact assessment included:

- A desktop review of nearby sensitive receptors, meteorological data and air quality monitoring data.
- Generation of an emissions inventory to determine onsite emission modelling rates for TSP and PM_{10} for the expansion project only. Emissions from the existing mine and processing facilities will be characterised using dust monitoring undertaken at the site.

- Development of site representative meteorological data for air dispersion modelling purposes.
- Air dispersion modelling for the expansion project for the operating year with the highest estimated dust emissions.
- Assessment of predicted ground level concentrations (GLCs) from air dispersion modelling against relevant air quality criteria to determine impacts as a result of the expansion project incrementally and cumulatively with the existing mine and processing facilities.
- Provide a dust management framework with abatement measures for the expansion project to reduce dust impacts at nearby sensitive receptors.

1.3 Limitations

This report has been prepared by GHD for Talison Lithium Australia Pty Ltd and may only be used and relied on by Talison Lithium Australia Pty Ltd for the purpose agreed between GHD and the Talison Lithium Australia Pty Ltd as set out Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Talison Lithium Australia Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Talison Lithium Australia Pty Ltd and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Project overview

2.1 Project background

The Mine is located within the Shire of Bridgetown – Greenbushes immediately south of the Greenbushes town site, approximately 250 km south of Perth and 80 km south-east of Bunbury in Western Australia (Figure 1-1).

The Greenbushes region is the longest continuously operated mining area in WA, when the mining of tin commenced in 1888. Since 1888, tin, tantalum and lithium have been mined. The current Mine has been operated as a modern open cut, hard rock operation on a continuous basis since 1983, with both tantalum and spodumene (lithium) ores being extracted and processed.

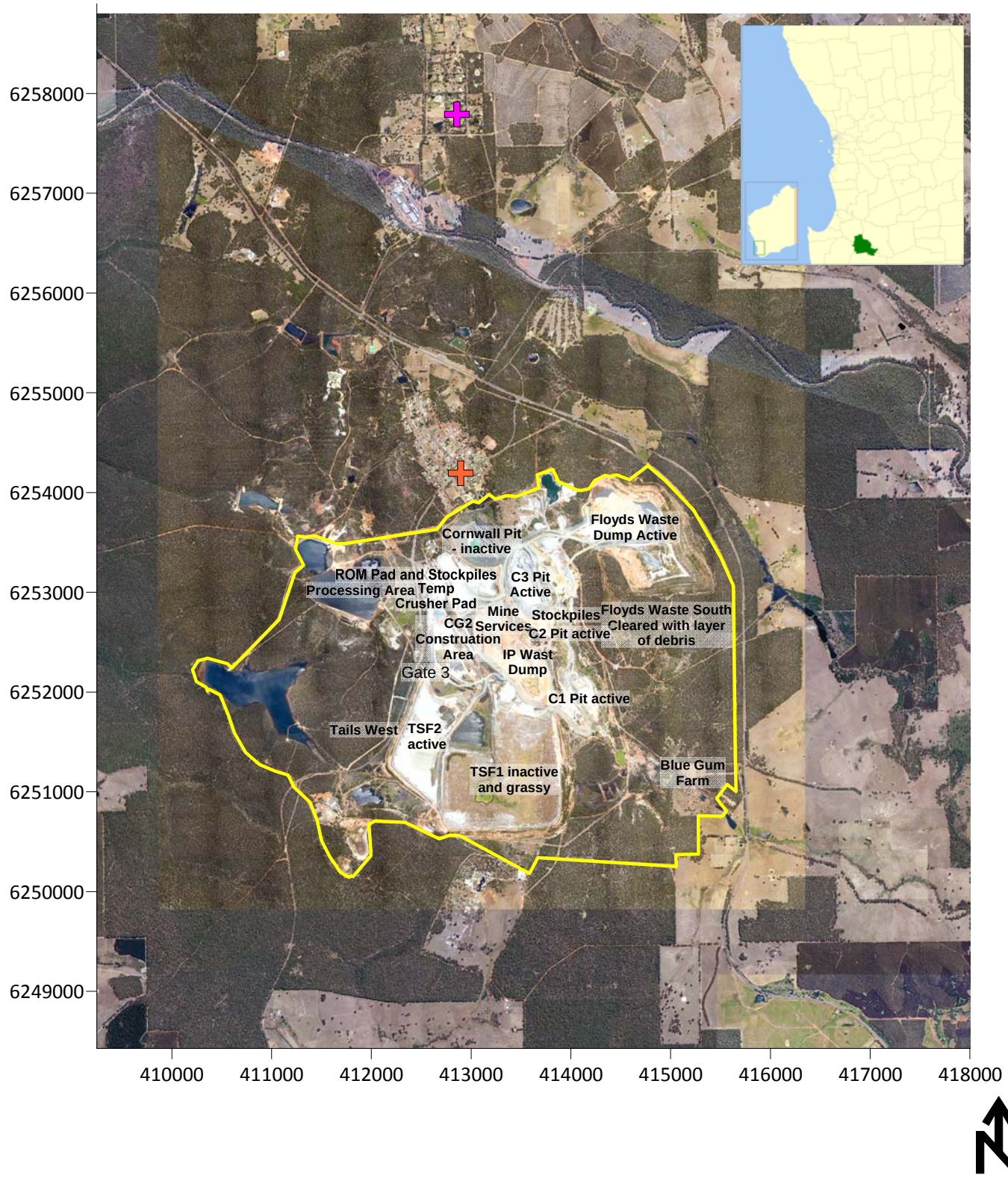
Currently there are two processing plants at the Mine, with an approved production rate of 4.7 Mtpa of spodumene ore.

Spodumene ore is mined from three existing pits. Mining consists of traditional drill and blast method within an open cut mine, and includes the stockpiling of ore. Waste rock is trucked to a designated area, Floyds Waste Rock Landform (WRL).

Progressive rehabilitation of the WRL is undertaken as part of the site annual rehabilitation program. Spodumene ore is trucked to one of two existing processing plants for treatment, the Technical Grade Plant (TGP) or the Chemical Grade Plant (CGP1), to produce lithium mineral concentrate. A second chemical grade plant, CGP2, is currently under construction at the Project and is expected to commence operation in 2019.

Currently, tailings resulting from processing of spodumene ore are transferred to the Tailings Storage Facility (TSF2) located south of the processing plants. The TSF is operated as a sub-aerial deposition storage. There is also an additional tailings facility, TSF1, which is currently inactive but use of this facility will recommence as part of the mine expansion.

The current site layout is shown in Figure 2-1.



Legend

- Existing mine boundary
- Greenbushes Township
- Greenbushes North

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HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

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TALISON LITHIUM LIMITED
TALISON GREENBUSHES DUST IMPACT ASSESSMENT
AIR QUALITY IMPACT ASSESSMENT

Existing site layout

FIGURE 2-1

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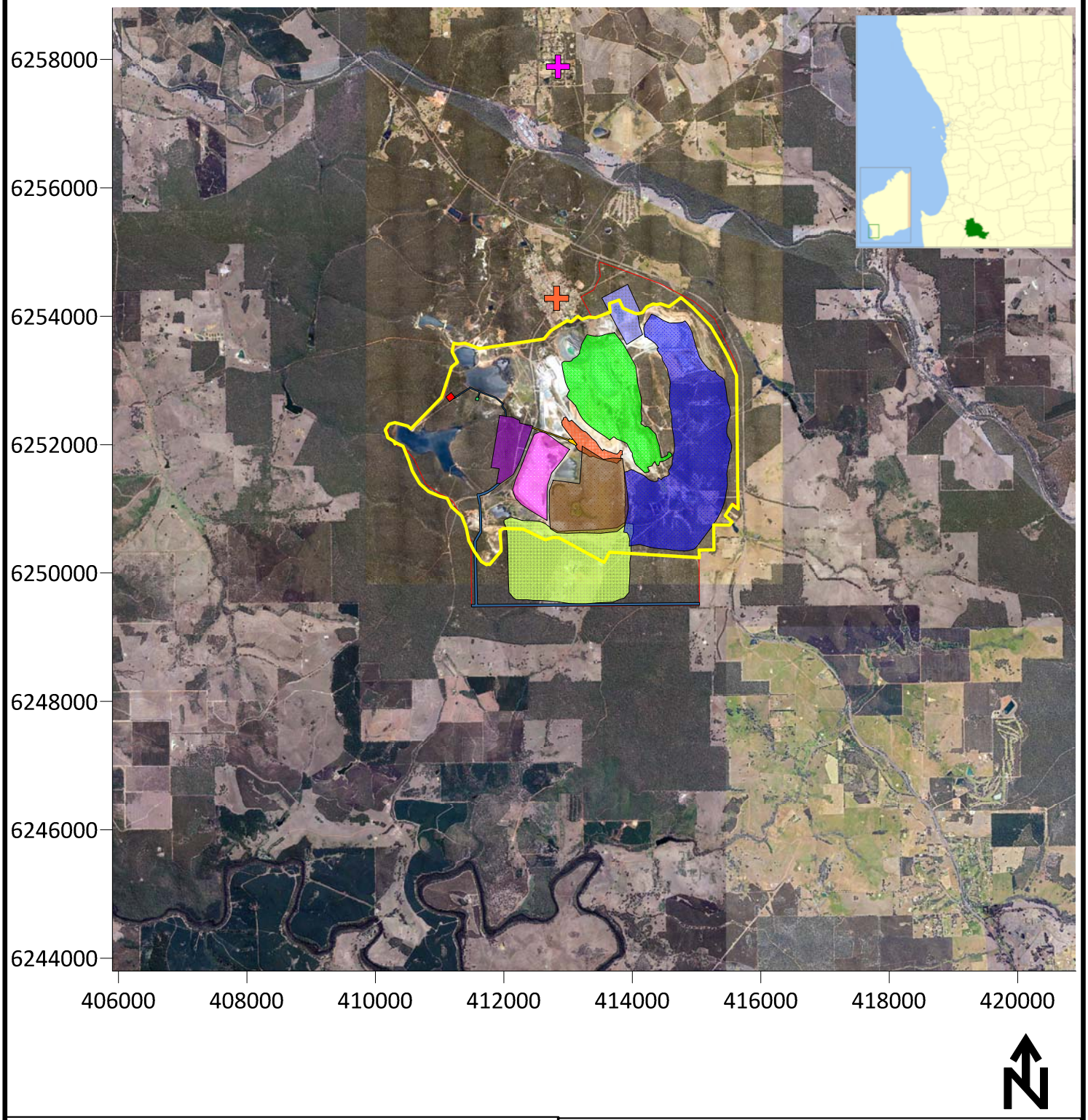
2.2 Project expansion

The expansion will increase throughput at the Mine from the current approved production rate of 4.7 Mtpa to 9.5 Mtpa of spodumene ore to produce up to 2.3 Mtpa of lithium mineral concentrate. Lithium mineral concentrate from the Mine is currently, and will continue to be, transported to the Port's of Bunbury and Fremantle for export. The expansion will result in increased supply of lithium mineral concentration which will be transported to the Tianqi Lithium Process Plant under construction in Kwinana, and the Albemarle Lithium Process Plant proposed for construction in the Kemerton Strategic Industrial Area north of Bunbury.

The approved boundary for the mining operation (Mine Development Envelope) will expand from the current 1591 ha area to 1889 ha. The expansion will involve the merging and expansion of three existing open pits, extension of the Floyds WRL, development of additional water catchment dams within the Floyd's WRL catchment, establishment of a new TSF4 to accommodate increased tailings production, and construction and operation of new infrastructure including a new Mine Services Area, explosive storage facilities, a new crushing circuit and three new CGPs (CGP3, CGP4 and a Tailings Retreatment Plant (TRP)).

A general layout of the proposed expansion to the Project is shown in Figure 2-2.



Legend

- TSF2
- Explosives Batch Facility
- Magazine
- Pit LOM 3 Plants
- CPG3 & 4
- Proposed mine boundary
- Existing mine boundary
- Greenbushes Township
- Greenbushes North
- Linear Infrastructure Corridor
- TSF1
- Mine Services Area
- Magazine
- Floyds Waste Dump
- Conveyor
- Run of Mine
- TSF4

0 2000 4000 6000

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HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

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TALISON LITHIUM LIMITED
TALISON GREENBUSHES DUST IMPACT ASSESSMENT
AIR QUALITY IMPACT ASSESSMENT

Proposed mine expansion site layout

FIGURE 2-2

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3. Emission sources

This section summarises the predominant sources, typical release types and major dust emissions from the proposed expansion. The emissions have been divided into construction and operational impacts.

3.1 Types of dust emissions

The majority of airborne particulates from the site are likely to be visible dust (TSP), with a low proportion of fine particulates. This is confirmed by site dust monitoring activities.

Emissions from the site operations are generated primarily from mining and process activities. The main pollutant of concern is dust and to a lesser extent emissions associated with the combustion of diesel fuel in mobile equipment. Emissions from site related activities comprises of the following dust particulate sizes:

- Total suspended particulates - particulates with an aerodynamic diameter less than 90 µm
- PM_{10} - particulates with an aerodynamic diameter less than 10 µm
- Deposited dust

3.2 Construction emissions

Emissions during construction include fugitive dust emissions from wind erosion, vehicle generated dust and minor emissions from fuel combustion from construction equipment and vehicles. Emissions occurring as a result of construction work include:

- Topsoil removal and vegetation clearing to expand the pits
- Construction of TSF4 and WRL

Installation and building of new TSF4, Mine Services Area, explosive storage facilities, a new crushing circuit and two new CGPs Generally, construction emissions associated with the expansion of the mine are variable and have a short-term nature, and it would be anticipated that the impact from construction to dust emissions would not be significant.

3.3 Operational emissions

The majority of dust from mining activities consists of coarse particles (around 40%) and particles larger than PM_{10}, generated from natural activities such as mechanical disturbance of rock and soil materials by blasting and drilling, dozing, excavation, loading and dumping, and trucks on haul roads. A small amount of dust emissions can be associated with crushing and processing. Dust is also generated when wind blows over bare ground and different types of stockpiles. The potentially significant sources of airborne particulates from the site have been assessed as being:

- Dust from drilling and blasting of the expanded pit
- Dust from excavation and dozing in the expanded pit and expansion of Floyds waste rock landform
- Dust from loading and dumping of spodumene ore product at the new pit and the additional run of mine (ROM). To a lesser extent, loading and dumping of spodumene ore at the new processing plants would also cause dust emissions.
- Dust from additional crushing and conveying activities
- Wind erosion dust from both the new TSF4 and the existing TSF1 and TSF2.

- Wind erosion dust from the expanded WRL
- Wind erosion dust from the exposed expanded mining pit
- Wind erosion dust from additional stockpiles (ROM, crushed ore and finished goods)
- Wind erosion dust lift off from new haul roads and internal roads resulting from light vehicle and heavy vehicle traffic

4. Air quality criteria

The impact of airborne particles as a result of mining operations are assessed by comparing air quality monitoring data or model estimates to appropriate criteria. The criteria referred to in this report are referenced from:

- *National Environment Protection (Ambient Air Quality) Measure* (AAQ NEPM), National Environment Protection Council (NEPC)
- *Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999* (Kwinana), WA EPA
- *State Environment Protection Policy (Air Quality Management)* (SEPP-AQM), EPA Victoria (2002)
- *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (Approved Methods), NSW EPA (2005)
- Licence conditions set out in Licence Number L4247/1991/13

Air quality impacts have been assessed both at an incremental and cumulative level (signal from mine plus background) to the respective guideline.

4.1 Assessment criteria

The AAQ NEPM was developed to provide benchmark standards for ambient air quality to ensure all Australians have protection from the potential health effects of air pollution. AAQ NEPM standards have been developed for carbon monoxide, nitrogen dioxide, photochemical oxidants (ozone), sulphur dioxide, lead and particulate matter (NEPC, 1998), however as the main pollutants of concern for this assessment are particulates, AAQ NEPM standards for particulate matter only will be shown (Table 4-1).

The AAQ NEPM does not outline any 1-hour PM_{10} criteria, TSP or monthly deposition criteria. Accordingly, the *State Environment Protection Policy (Air Quality Management)* (EPA Victoria, 2002) *Environmental Protection (Kwinana) (Atmospheric Wastes) Policy 1999* (EPA WA) and *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2005) have been used for this assessment.

These three additional guidelines set limits for criteria as indicated in Table 4-1.

Table 4-1 Criteria for ambient air quality

Pollutant	Averaging period	Maximum allowable concentration	Guideline
TSP	24-hour	90 µg/m^3	Kwinana
	Annual	90 µg/m^3	Approved Methods
PM_{10}	1-hour (99.9th percentile)	80 µg/m^3	SEPP-AQM
	24-hour	50 µg/m^3	AAQ NEPM
	Annual	25 µg/m^3	AAQ NEPM
Deposited dust	Maximum increase	2 g/m^2/month	Approved Methods
	Maximum total	4 g/m^2/month	Approved Methods

4.2 Ambient Air Quality Monitoring Conditions

Condition 3.4.1 of Talison's current operational licence issued under Part V of the EP Act (L4247/1991/13) requires that ambient air quality monitoring is carried out at a specified monitoring location. The condition requirements are provided in Table 4-2, and the location of the dust monitor is shown in Figure 5-8.

Table 4-2 Required monitoring of ambient air quality for Licence Number L4247/1991/13

Parameter	Averaging period	Maximum allowable concentration	Method
PM_{10}	24 hours	90 µg/m^3	Talison Lithium Environmental Procedure ENV 2010: Air quality monitoring – High volume sampler

5. Existing environment

5.1 Topography and land use

The Mine is located predominantly within the Greenbushes State Forest with a small area located on private property (rural). The surrounding area includes areas of native vegetation interspersed with historical and current mining operations, townsites, farmland, water storages, plantations, power infrastructure and roads. The mine is immediately south of the town of Greenbushes with the closest residences located approximately 100 m from the inactive Cornwall Pit. A Sound Wall (bund) is located between the town and mine. Current primary land uses within the Mine Development Envelope are for mining, agriculture, conservation and forestry (State Forest) and water catchment.

The Mine is located at a high point of the Darling Plateau. The Plateau is characterised as an expansive undulating landscape with green forest vegetation and occasional rocky outcrops and peaks. The open pits are located along a ridgeline at approximately 300 m AHD which runs from the Greenbushes town site to the south east. Development of the pits will continue along the ridge line for the expansion of the Mine.

Floyds WRL is located on an east facing hill slope between the open pits and the South Western Highway. The WRL acts as a buffer to receptors to the east of the Mine.

5.2 Climate and meteorology

The Mine is located within the South West of Western Australia (SWWA) which experiences a climate which is typically Mediterranean, characterised by hot, dry summers and mild, wet winters (Morgan, 2012). Climate data from the Bridgetown weather station (located approximately 13 km south-east of the Project) are available from the Bureau of Meteorology (BoM) for the years 1998 to 2018 (BoM, 2018).

On average, the maximum temperature at Bridgetown ranges from 16ºC to 30ºC, with the maximum recording reaching 41ºC. The average minimum temperature ranges from 5ºC to 14ºC. Figure 5-1 shows annual temperatures recorded at Bridgetown.

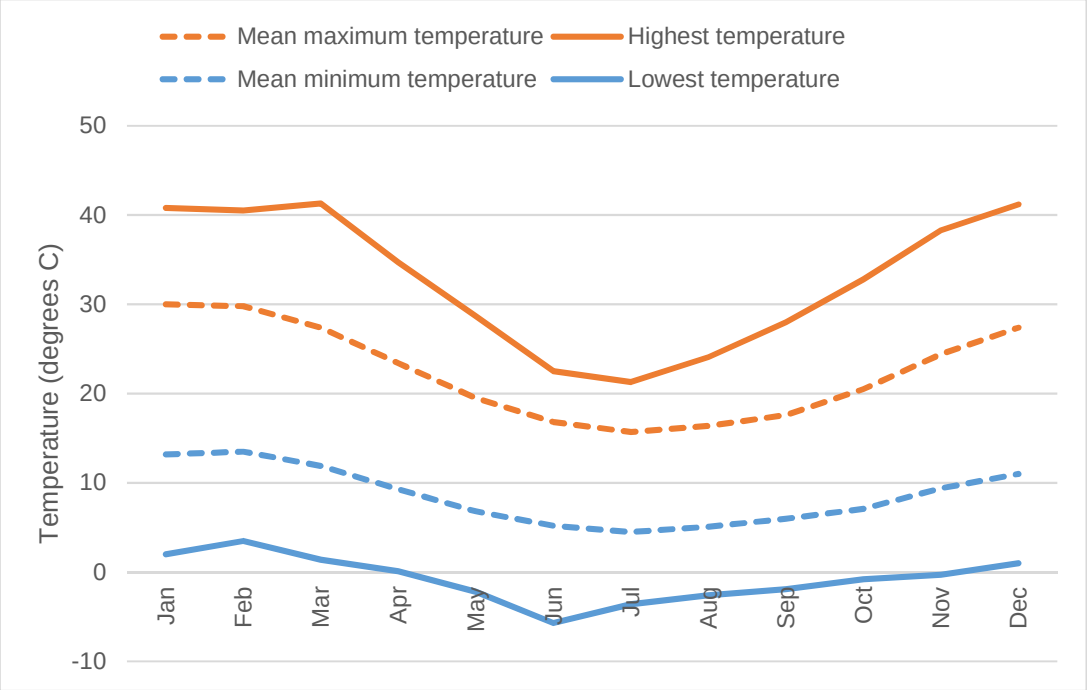


Figure 5-1 Temperature observations for Bridgetown, for years 1998 to 2018

Annual mean rainfall at the station is 721 mm, peaking in winter, with a maximum monthly mean of 128 mm during July. The lowest monthly mean rainfall is recorded in February with 12 mm. On average, the number of rain days per year is 156. Monthly rainfall observations for Bridgetown are shown in Figure 5-2..

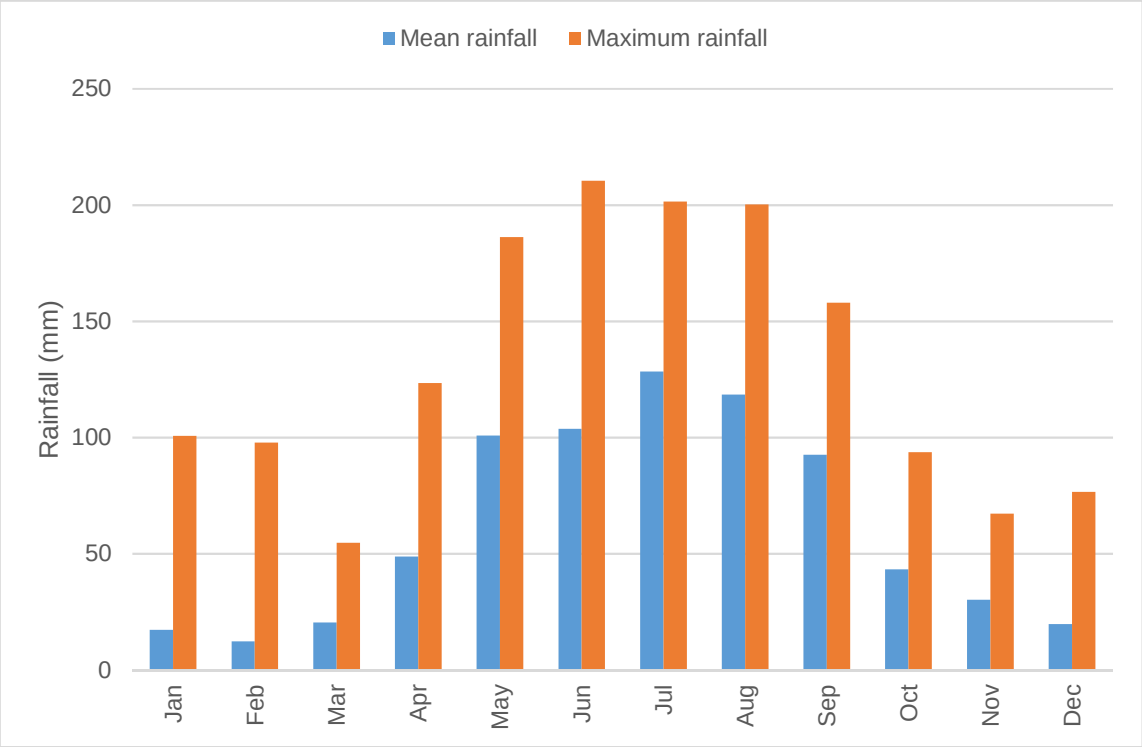


Figure 5-2 Rainfall observations for Bridgetown, for years 1998 to 2018

In Bridgetown, relative humidity peaks in winter during July and declines in summer, reflecting the dry climate of the SSWA region in the summer months. Minimum relative humidity occurs during December to February. 9:00 am and 3:00 pm relative humidity are shown in Figure 5-3.

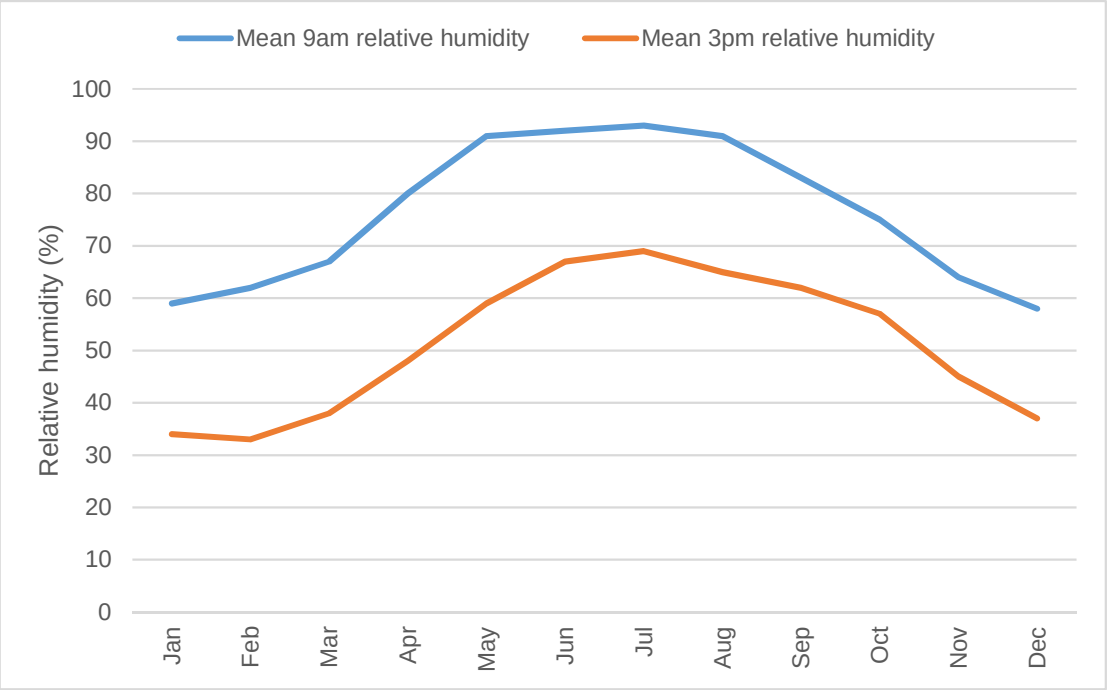


Figure 5-3 Mean relative humidity for Bridgetown, for years 1998 to 2010

Bridgetown is subject to mild variable winds with south-east winds dominating in the morning, and either south or north-westerly winds dominating in the afternoon.

5.3 Air quality

5.3.1 Existing emissions

It is useful to examine existing air quality to provide a general description and understanding of the current local airshed as a result of current mine operations and other contributing sources.

Regional dust sources in the local airshed of the site are:

- Mechanical land disturbance from surrounding pastoral properties;
- Vehicle movement along unsealed roads;
- Burning and incineration (e.g.. backyard burning, residential wood fired heaters, prescribed burns and wildfires); and
- Emissions from the existing Mine, including wind erosion from the TSF1, TSF2, Floyds WRL, existing pits, stockpiles and haul roads. Other dust sources to a smaller extent include blasting, crushing, conveyors and loading/unloading activities.

5.3.2 Project dust monitoring

PM_{10} is monitored by a permanent high volume dust monitor (HiVol), located at the north end of the site, shown on Figure 5-8.

Figure 5-4 shows the daily (24- hour average) concentrations of PM_{10} recorded using the HiVol between 2013 and 2018. Occasional exceedances of 50 µg/m^3 at this location have been recorded at the monitoring location but these have been associated with smoke resulting from

burning in the region, or unrelated construction/earthworks activities occurring in proximity to the dust monitor. No exceedances of the operating licence limit of 90 µg/m^3 PM_{10} (refer to Section 4.2) have occurred.

Table 5-1 shows the circumstances surrounding concentrations above 50 µg/m^3.

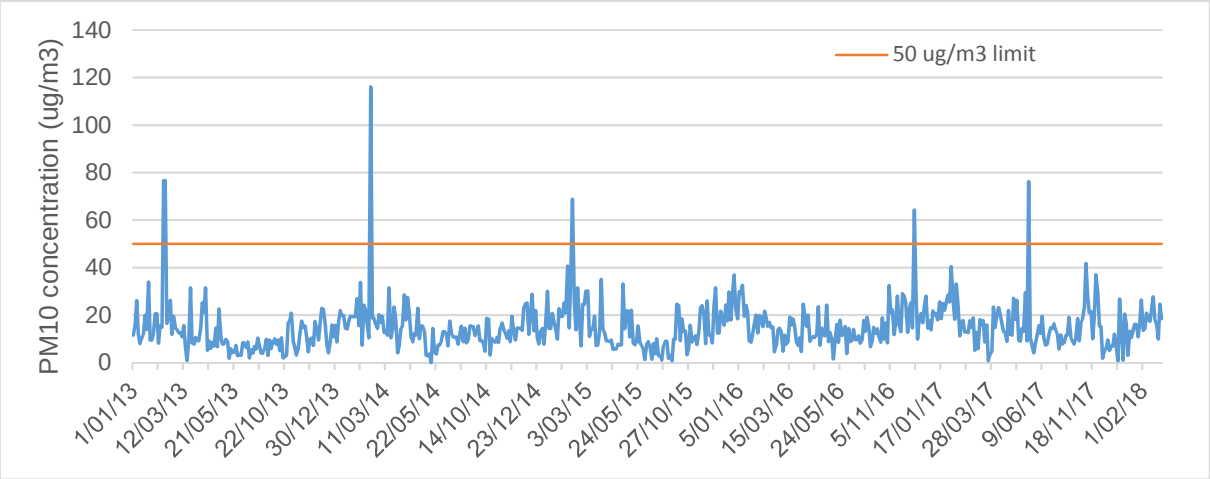


Figure 5-4 Daily time series PM_{10} concentrations recorded by the HiVol for years 2013 to 2018

Figure 5-5 shows the hourly averaged concentrations of PM_{10} recorded using the TEOM between July 2015 and June 2016 (this is the meteorological modelled year, discussed further in Section 6. Several exceedances of the 80 µg/m^3 occur throughout the year

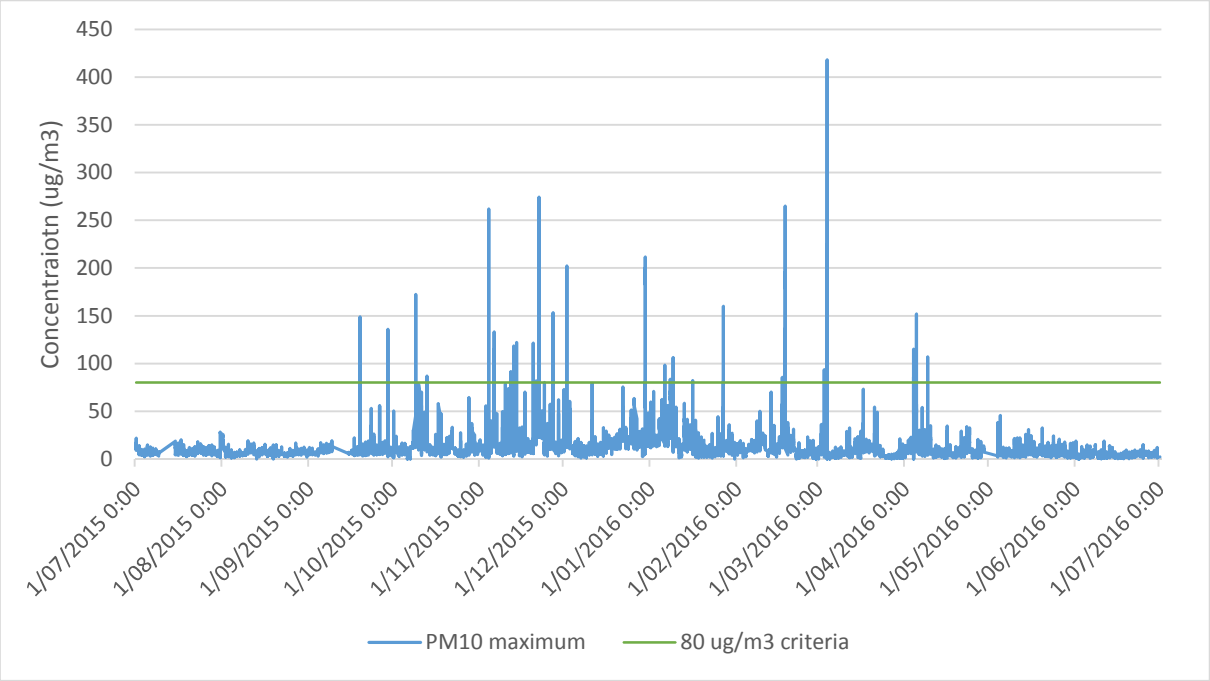


Figure 5-5 Hourly time series PM_{10} concentrations for the 2015-2016 modelling year recorded by the TEOM

Table 5-1 Explanations for concentrations over 50 µg/m^3

Date	Concentration (µg/m^3)	Explanation
12 February 2013	77	Southampton bushfire
14 February 2013	77	Southampton bushfire
18 February 2014	117	Water Corporation dozer clearing alongside dust monitor
10 February 2015	69	Northcliffe and Boddington bushfire
8 December 2016	64	Smoke
18 May 2017	76	Prescribed burning at Maranup Ford Road

5.3.3 TSP concentration

TSP monitoring was conducted at the site using a HiVol from December 1998 to June 2001, thus a five year review of TSP levels cannot be conducted. The HiVol is shown in Figure 5-8.

Where TSP data are available, paired datasets (i.e. days only considering both measurements) of TSP and PM_{10} can be used to assess the PM_{10} to TSP concentration ratio, which can then be used to calculate a TSP concentration where TSP data is unavailable but measurements of PM_{10} exist. Measured values of TSP and PM_{10} are shown in Figure 5-6 as paired datasets for the period December 1998 to June 2001. Both dust pollutants show a similar trend in varying concentrations.

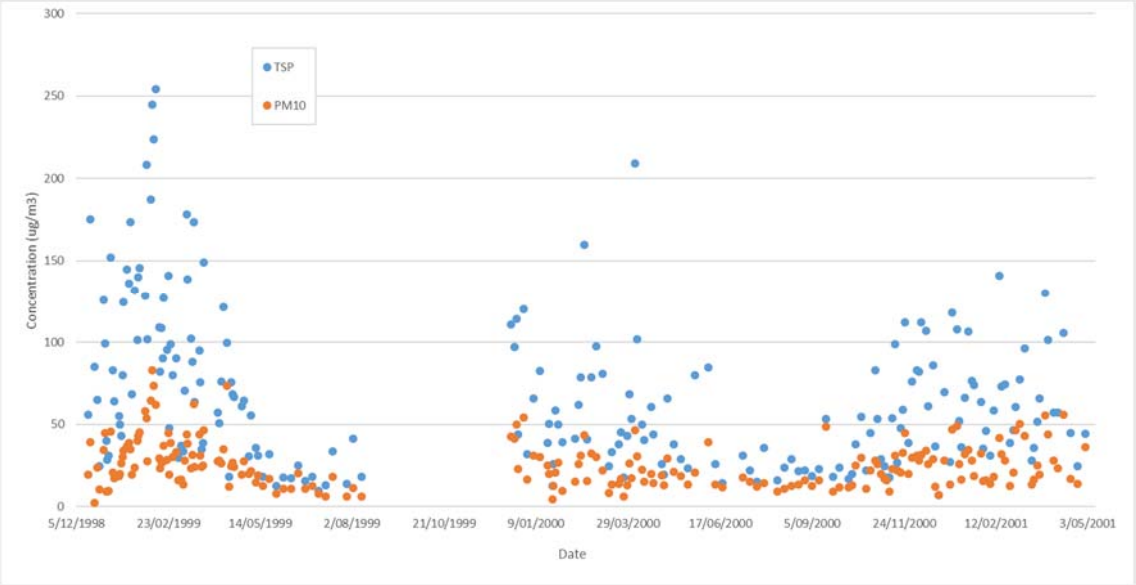


Figure 5-6 24-hour average time series PM_{10} and TSP concentrations recorded by the HiVol for December 1998 to June 2001.

For further analysis, a quantile-quantile plot (Q-Q plot) can be undertaken to assess how closely TSP and PM_{10} fit a common particle concentration distribution. A Q-Q plot PM_{10} and TSP concentration distribution is shown in Figure 5-75-. The points in the Q-Q plot are strongly positioned just above the diagonal (1:2 line), indicating a strong relationship between PM_{10} and TSP.

Overall, the PM_{10} particle size mass fraction is in the order of 40% of the recorded TSP mass between December 1998 and June 2001.

On this basis, and in the absence of site-specific monitoring data for TSP between 2013 and 2018, TSP concentrations will be derived from PM_{10} concentrations recorded from the HiVol for the period 2013 to 2018.

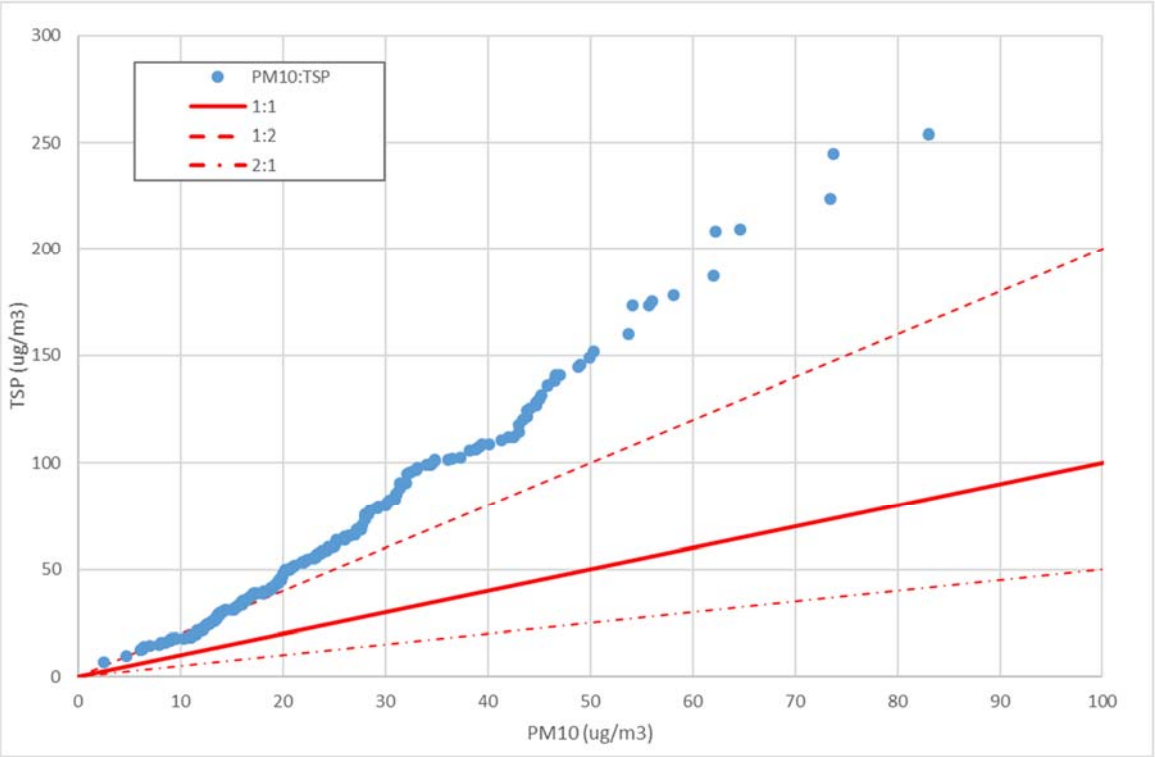


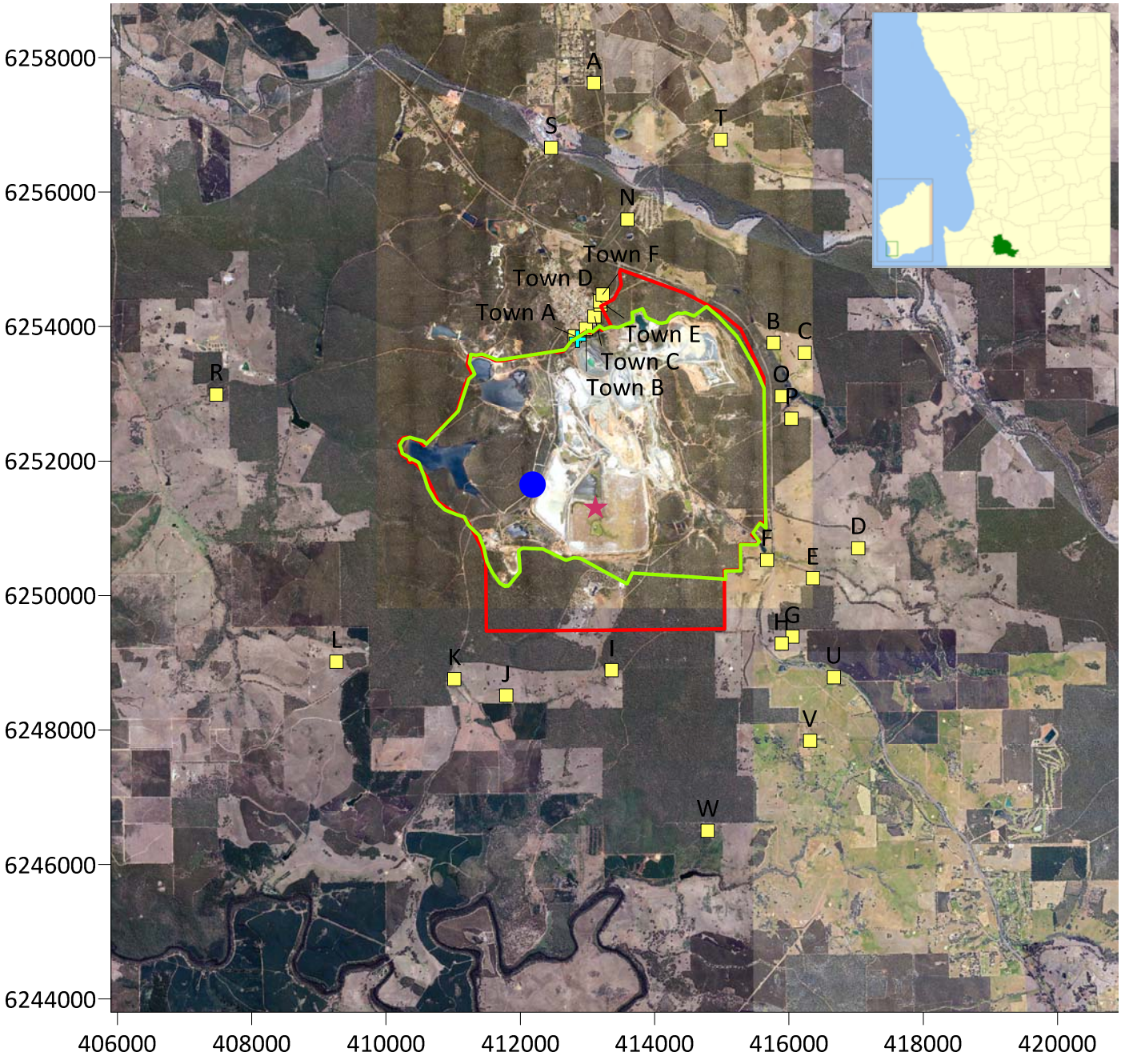
Figure 5-75- Q-Q plot PM_{10} and TSP particulate concentration distribution

Sensitive receptors

Sensitive receptors are classified as places where people are likely to work or reside. This may include dwellings, schools, hospitals, offices or public recreational areas (NSW DEC, 2005). There are 28 identified sensitive receptors within a 10 km radius of the Talison Greenbushes Lithium Operations. Of the 28, six are residences in the town of Greenbushes and the closest receptors to the Mine within the township. These are identified in the modelling and this report as Town A-F with the remaining 22 identified as receptors A to W. Due to the town's proximity to the Mine, residents of Greenbushes (population of 362 (ABS 2016)) are considered sensitive receptors.

Figure 5-8 shows the location of the sensitive receptors, including the HiVol dust monitor and the TEOM location.

Table 5-2 displays the sensitive receptors and their distance to the site.



Legend

- Sensitive receptor
- HiVol
- Existing mine boundary
- Proposed expansion mine boundary
- TEOM
- Meteorological station

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

DATE	FILE LOCATION:
7.12.2018	G:\61\36950\Tech\Dust Assessment\WP\Surfer
REVISION	DRAWING NO
Rev 4	6136950-FIG-5-8

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Identified sensitive receptors and dust monitor locations

FIGURE 5-8

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Table 5-2 Sensitive receptors locations

Sensitive receptor	Land classification	Easting (m E UTM)	Northing (m S UTM)	Elevation (m AHD)	Distance from mine boundary (km)
Town A	Residential (Greenbushes Township)	412813	6253855	330	<1
Town B	Residential (Greenbushes Township)	412980	6253966	326	<1
Town C	Residential (Greenbushes Township)	413106	6254150	322	<1
Town D	Residential (Greenbushes Township)	413196	6254323	332	<1
Town E	Residential (Greenbushes Township)	413190.2	6254373	341	<1
Town F	Residential (Greenbushes Township)	413227	6254476	292	<1
A	Residential	413599	6255592	289	2.2
B	Residential	415772	6253756	287	2.9
C	Residential	416238	6253607	283	2.3
D	Residential	415896	6252964	227	<1
E	Residential	416041	6252630	264	<1
F	Residential	417034	6250703	234	<1
G	Residential	416360	6250255	224	<1
H	Residential	415676	6250526	251	1.4
I	Residential	416054	6249386	225	<1
J	Residential	415894	6249284	223	1.1
K	Residential	413363	6248888	267	<1
L	Residential	411793	6248510	268	1.1
M	Residential	411021	6248757	193	1.7
N	Residential	409264	6249013	241	2
O	Residential	405054	6249792	247	6.2
P	Residential	407477	6252988	257	<1
Q	Residential	412460	6256660	267	<1
R	Residential	413097	6257623	255	<1
S	Residential	414987	6256777	246	2.3
T	Residential	416674	6248781	222	2.8
U	Residential	414793	6246500	118	2.9
V	Residential	414793	6246500	331	< 1
HiVol	Dust monitor	412855.2	6253814	326	<1

6. Meteorology

6.1 Surface and profile meteorological file

Onsite meteorological data (location shown in Figure 5-8) was used to prepare meteorological data in required formats for the AERMOD dispersion model. Two meteorological data files were required: surface met file and upper air file. The following onsite meteorological observation were used for input to the surface file into AERMOD

- Wind speed
- Wind direction
- Temperature
- Relative humidity
- Convective mixing height
- Mechanical mixing height
- Monin-Obukhov length
- Surface roughness height
- Bowen ration
- Albedo
- Cloud cover

The upper air file for AERMOD provides information on the vertical structure of the atmosphere and requires minimum two soundings per day: around sunrise and sunset. These data were also extracted onsite meteorological data and formatted into a profile file. In applying the meteorological processor to prepare the meteorological data for the AERMOD model appropriate values for five surface characteristics needed to be determined:

- Wind speed
- Wind direction
- Temperature
- Sigma-theta
- Sigma-W

The surface roughness length is related to the height of obstacles to the wind flow and is important in determining mechanical turbulence and the stability of the boundary layer.

The albedo is the fraction of total incident solar radiation reflected by the surface back to space without absorption. The daytime Bowen ratio, an indicator of surface moisture, is the ratio of sensible heat flux to latent heat flux and is used for determining planetary boundary layer parameters for convective conditions driven by the surface sensible heat flux.

Average land use characteristics were derived from satellite imagery. From this visual data, land use parameters were input into AERMOD across all sectors and are shown in Table 6-1 to Table 6-3.

Table 6-1 Land use characteristics input into AERMOD - Albedo

Season	Albedo
Summer	0.181
Autumn	0.181
Winter	0.199
Spring	0.181

Table 6-2 Land use characteristics input into AERMOD - Bowen ratio

Months	Bowen ratio
December to February	0.87
March to August	1.05
September to November	0.52

Table 6-3 Land use characteristics input into AERMOD - Surface roughness

Wind direction	Surface roughness
360/0º - 20º	0.27 m
20º - 340º	0.1 m
340º – 360/0º	0.27 m

6.2 Meteorological confirmation

Onsite site-specific meteorological data were used to generate a meteorological file from July 2015 to July 2016. This was compared to a five year average and based on a comparison of average rainfall and solar radiation. This qualifies with the recommendations with the *Requirements for Preparation, Adoption, and Submittal of State Implementation Plans (Guideline on Air Quality Models)* (US EPA, 2000) as the most representative meteorological year, as specifically onsite meteorological data has been used to generate a meteorological file, as opposed to a prognostic model.

6.3 Wind Roses

A plot of the wind roses generated based on surface output meteorological data is presented in Figure 6-1 Surface file wind rose (left) and onsite wind rose (right) for period 1 June 2015 to 30 June 2016

, together with the corresponding wind rose from the 1 June 2015 to 30 June 2016 modelling period. From these wind roses, it is evident that the surface wind direction and wind speed used in AERMOD input resembles the raw onsite data, although the frequency varies slightly. East south-easterly winds dominate the site with the majority of winds speeds between 3.6 and 8.8 metres per second. Wind speeds increase slightly in the west north-westerly to up to 11.1 metres per second.

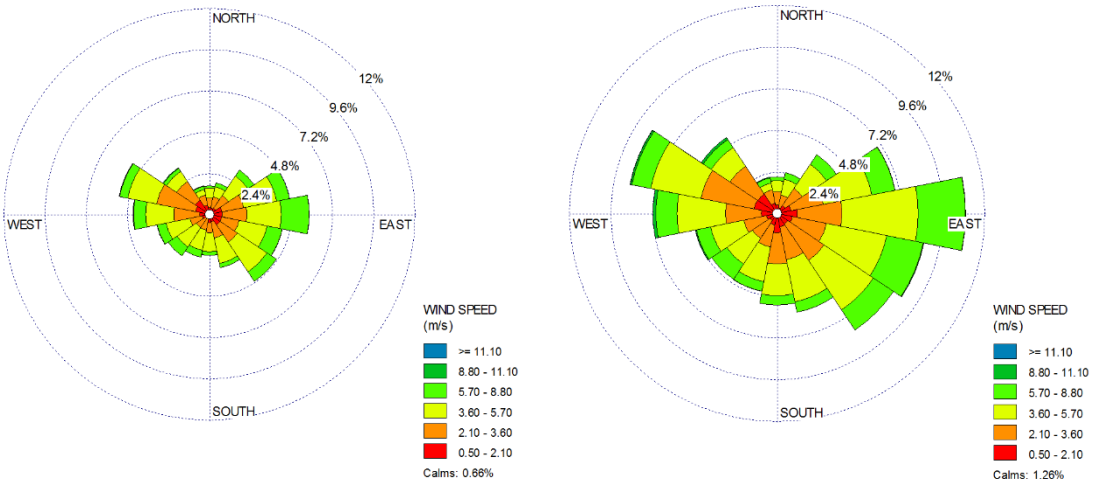


Figure 6-1 Surface file wind rose (left) and onsite wind rose (right) for period 1 June 2015 to 30 June 2016

7. Emission estimation

This section outlines the emission estimation process used to develop the emission inventory for operation of the expansion project.

7.1 Emission estimation process

Emissions were estimated for key dust sources during the operational phase of the expansion project.

While emissions from the operational phase of the expansion project will be referenced in the dispersion modelling, construction emissions associated with the expansion of the site will not be considered due to their short term nature, variable spatial distribution of these activities and the challenges associated with modelling such emissions.

Dust impacts associated with construction activities at the site have been discussed in Section 3.2.

7.1.1 Sources of emissions - Operational phase

The emission sources for the operation phase of the expansion project are discussed in detail in Section 3.3. To summarise, dust for TSP and PM_{10} sources included:

- Drilling
- Blasting
- Excavation at the pits
- Material loading and unloading by loaders
- Bulldozers on ore and waste
- Wheel generated dust from haul roads
- Wind erosion from stockpiles, pits, TSF's and Floyds WRL

The year considered for predicted dust impact was 2028. This year represents the maximum amount of activity at the site. A Life of Mine (LOM) summary is presented in Table 7-1. This includes processing ore from the pits at a maximum rate of 9.5 Mtpa. Of this, 0.4 Mtpa will be processed at the TGP plant, and the remaining 9.1 Mtpa will be processed via the CPGs. During the year 2028, an estimated 66 Mtpa of waste will be dumped at Floyds WRL.

Table 7-1 Production output during LOM

Activity	2020	2024	2028	2032	2036
Product mined (Mtpa)	12,242	14,701	32,938	8,318	14,943
Waste mine (Mtpa)	29,256	41,259	66,000	5,769	39,848
Bulk explosives (tpa)	5,827	7,505	18,009	3,055	-

Further details including drilling, blasting and waste volume are shown in Table 7-2. The dust control factors applied in the emissions estimation process are defined in Table 7-3. The resulting annual PM_{10} emissions from operations at the expansion project are presented in Table 7-4.

Table 7-2 Site-specific data – Operational phase

Item	Amount
Area per blast	4000 m^2

Number of blasts	1 /day
Number of holes drilled	250 /day
Quantity of ore extracted	9.5 Mtpa
Quantity of waste to facility	66 Mtpa

Table 7-3 Dust control factors (source: NPI EET Manual for Mining v3.1, Table 4)

Item	Dust reduction (%)
Level 1 watering of haul roads	50
Water sprays (50%)	50
Water sprays (70%)	70
In pit retention (TSP)	50
In pit retention (PM_{10})	5
Water sprays with chemicals	90
Vegetation established	90
Wind break	30
Rock armour/topsoil applied	30
Hooding with fabric filters	83
Hooding with scrubbers	65
Telescopic chute with water sprays (processing plant)	75

Table 7-4 TSP and PM_{10} emissions – Operational phase expansion project (kg/yr)

Activity	TSP	PM_{10}	Control
Drilling	37,686	19,801	Water spray (70%), total enclosure
Blasting	300,750	155,778	Water sprays (70%)
Excavators	613,200	294,336	Wind breaks
ROM loaders	613,200	294,336	Wind breaks
Rock breakers/Excavators	459,900	220,752	Wind breaks
Transfer stations	208	685	Hooding with fabric filters
3 stage crusher	54,750	5,475	Telescopic chute with water sprays, hooding with scrubbers, water sprays (50%)
2 stage crusher	54,750	5,475	Telescopic chute with water sprays, hooding with scrubbers, water sprays (50%)
Stockpiles (loading and unloading)	399,806	173,218	Enclosure and water sprays
Haul trucks (pits and site)	12,118	3,581	Water sprays with chemicals, Level 1 watering ($2L/m^2/h$), wind breaks
Haul trucks (waste dump)	47,462	14,025	Water sprays with chemicals, Level 1 watering ($2L/m^2/h$), wind breaks
Dozer (pit)	208,488	50,282	Wind breaks
Dozer (waste dump)	187,639	45,254	Rock armour/ topsoil applied, vegetation established
Stockpiles (wind erosion)	8,497	4,249	None (ROM stockpiles) Telescopic chute with water sprays and water sprays (50%) (fine ore stockpile) Enclosure (final product stockpile)

The emission rates used for modelling based on the assumptions discussed above are shown in Table 7-5. The modelling source location is shown in Figure 8-1. Further site specific information and NPI emission factors used for estimating emissions to be used in AERMOD are shown in Appendix B.

Table 7-5 Emission rates used for AERMOD

Activity	Unit	Period (daily)	TSP	PM_{10}
Blasting	g/s	5:00 PM– 6:00 PM	4.3	2.4
Drilling	g/s	5:00 PM– 6:00 PM	0.02	0.01
Excavators	g/s	All	1.32	0.63
Rock breakers	g/s	5:00 AM -5:00 PM	1.75	0.84
Dozers at pits	g/s	All	3.31	0.80
Dozers at WRL	g/s	All	1.98	0.48
Haul trucks to WRL	g/s	All	0.06	0.02
Haul trucks to pits	g/s	All	0.25	0.07
Conveyor transfer points	g/s	2:00AM -00:00AM (8000 hrs p/yr)	0.004	0.01
3 stage crusher	g/s	5:00 AM -5:00 PM	0.46	0.05
2 stage crusher	g/s	5:00 AM - 5:00 PM	1.43	0.14
Unloading ore stockpiles	g/s	All	2.19	0.95
Loading fine ore stockpile at TIL	g/s	All	0.01	0.00
Loading final product stockpile	g/s	All	0.14	0.06
ROM stockpile (for TIL, CPG1 & CPG2)	g/s/ha	All	0.004	0.002
ROM stockpile (for CPG 3 & CPG4)	g/s/ha	All	0.004	0.002
Fine ore stockpile	g/s/ha	All	0.001	0.0003
Final Product Stockpile	g/s/ha	All	0.001	0.0007
Pits-1	g/s/ha	All	1.4	0.7
Pits-2	g/s/ha	All	1.4	0.7
Pits-3	g/s/ha	All	1.4	0.7
TSF1-1	g/s/ha	All	0.30	0.15
TSF1-2	g/s/ha	All	0.12	0.06
TSF4-1	g/s/ha	All	0.5	0.2
TSF4-2	g/s/ha	All	0.5	0.2
WRL	g/s/ha	All	0.38	0.2

8. Dispersion modelling

This section describes the model used to predict ground level concentrations (GLC) resulting from the expansion project based on derived emission rates and meteorological data.

This section provides further information on the model parameters selected for the dispersion model AERMOD. It also summarises the dispersion modelling results.

AERMOD is a steady state model and assumes that over time, the average concentrations distribution within a plume is Gaussian. AERMOD was used to predict the dispersion of TSP, PM_{10} and dust deposition at 35 receptors within the region (Figure 5-8). A sample AERMOD output file typical of those used in this assessment is presented in Appendix A. The main model options and assumptions used are listed below.

The emission estimations for all modelled sources are presented in Appendix B. AERMOD was run individually for each particle size (TSP and PM_{10}) with their corresponding emission rates. The TSP model run was configured to output dust deposition at the receptors.

8.1 Deposition modelling

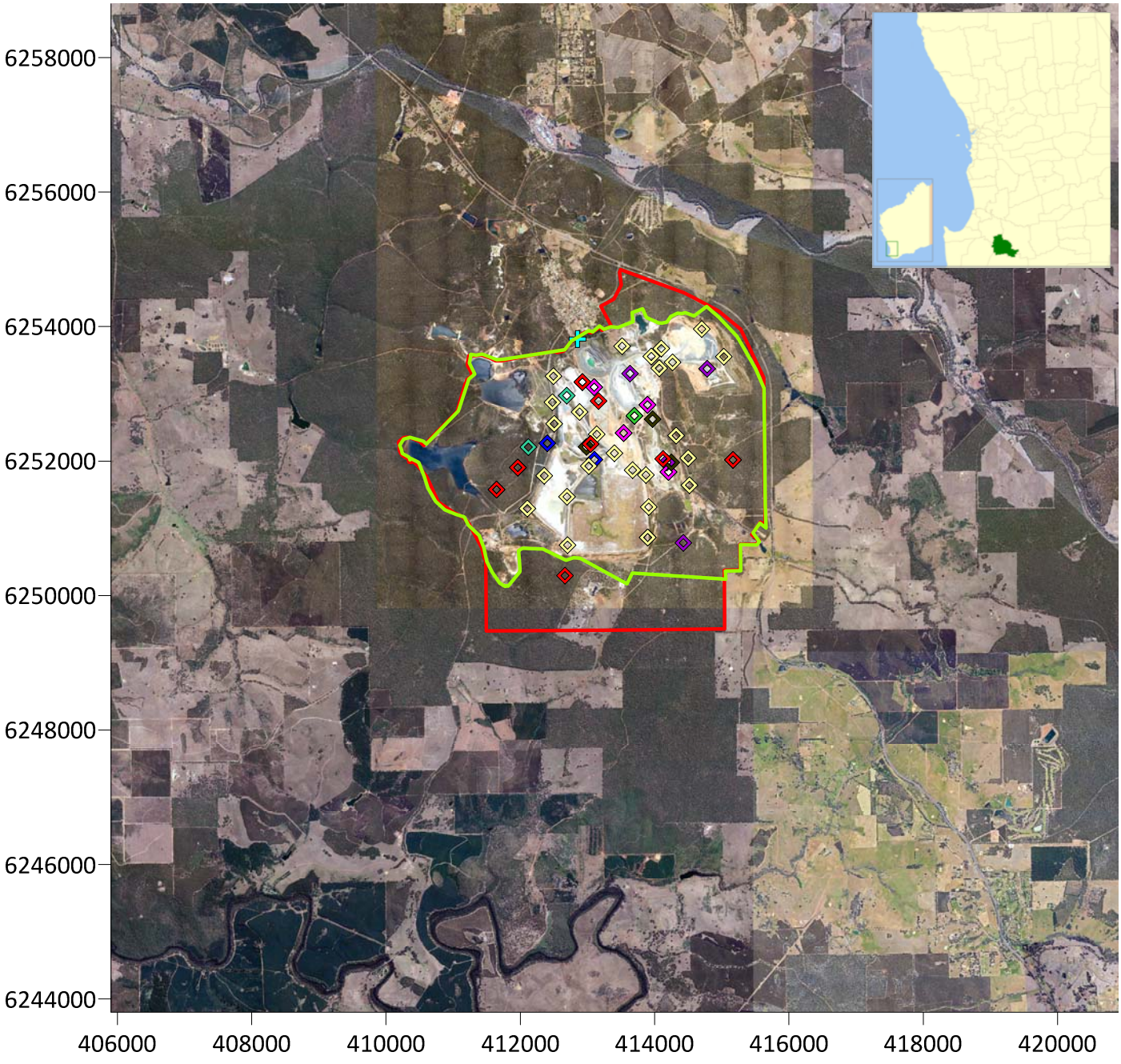
One emission file was generated for each particle size category for TSP and PM_{10} with their corresponding particle size distributions; pollutant concentrations were modelled accounting for dry depletion. The TSP model run was configured to output dry deposition. Character particle source emissions to calculate deposited dust from TSP are shown in Table 8-1

Table 8-1 Character particle source emissions

Particle diameter (µ)	Mass fraction	Particle density (g/cm^3)
1	0.31	1
4	0.26	1
7	0.23	1
9	0.2	1

8.2 Source characteristics

A total of 60 volume sources were used to represent emissions: 34 sources to represent operational emissions including wind erosion and 26 sources to represent emissions of wheel generated dust (Figure 8-1). Sources were modelled as shown in Table 7-5. Modelling source characteristics parameters are shown in Appendix C.



Legend

- Existing mine boundary
- Proposed expansion mine boundary
- Blasting
- Conveyor
- Crusher
- Dozer
- Drilling
- Excavator
- Haul truck
- Loader
- Rock breaker
- Stockpile
- Wind erosion

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

DATE	FILE LOCATION:
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Rev 4	6136950-FIG-8-1

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AERMOD source locations

FIGURE 8-1

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8.3 Grid system

AERMOD has the capability to calculate concentrations on both a uniform grid (gridded receptors) and at specified individual locations (discrete receptors, or 'sensitive receptors'). The model was configured to predict the ground-level concentrations on a 15 km square grid. The model domain south-west corner was located at 403805 m E, 6241702 m S (50S UTM) with a grid resolution of 200 m.

8.4 Background concentrations

When conducting air dispersion modelling, it is important to consider the existing background concentrations. Background concentrations consist of dust from the existing mine and processing facilities as well as regional background dust.

PM_{10} onsite monitoring data discussed in Section 5.3.2 was used in this assessment. The annual average, and both the 70th percentile of the 1-hour and 24-hour average concentrations from July 2015 to June 2016 were used as the existing background concentrations in consideration with cumulative modelling (Table 8-2)

The 70th percentile background concentration selected is conservative and contributes to one third of the PM_{10} criterion for every 24-hour period in the model. In reality, background particulate concentrations due to natural sources, like bushfires, are highly variable, and the probability of peaks in background concentration and impact due to mining operations occurring simultaneously is low (GHD, 2017).

A PM10 to TSP ratio of 0.4: 1 µg/m^3 has been applied to determine a background TSP concentration of 45 µg/m^3 (refer Table 8-2).

Table 8-2 Air quality statistics for PM_{10} and TSP throughout July 2015 to June 2016 (µg/m^3)

Parameter	TSP 24 hour average[1]	PM_{10} 1 hour average	PM_{10} 24 hour average
Minimum	2	0.02	0.8
30th percentile	23	6	9
50th percentile	33	8	13
Average	35	12	14
70th percentile	**45**	**12**	**18**
90th percentile	60	22	24
Maximum	93	418	37

1 Calculated using 40% PM_{10}:TSP ratio

8.5 Model results

This section presents the results for the model outputs for TSP, PM_{10} and dust deposition. Results presented are for the predicted contribution from the expansion project (incremental) and for the expansion project inclusive of the existing mine and processing facilities (cumulative) by including the background, as discussed in Section 5.3. The emissions used in the modelling are presented in Section 7 while the assessment criteria are discussed in Section 4. Section 8.5.1 to 8.5.3 show the results from predictive air dispersion modelling for TSP, PM_{10} and deposited dust. A discussion of results is included at Section 8.6.

Whilst air dispersion modelling has been conducted using the most appropriate model AERMOD, any dispersion model cannot consider all aspects of what is a highly complex

atmospheric environment within which dispersion occurs. Coupled with this is, uncertainty with the estimation of dust emissions from various sources across the proposed expansion.

Model predictions are provided based on the best available practices but due to the above factors do not necessarily lead to pollutant predictions that are in line with measured pollutant concentrations. Dispersion modelling is used as an assessment tool, in conjunction with on site management and mitigation measures.

8.5.1 TSP

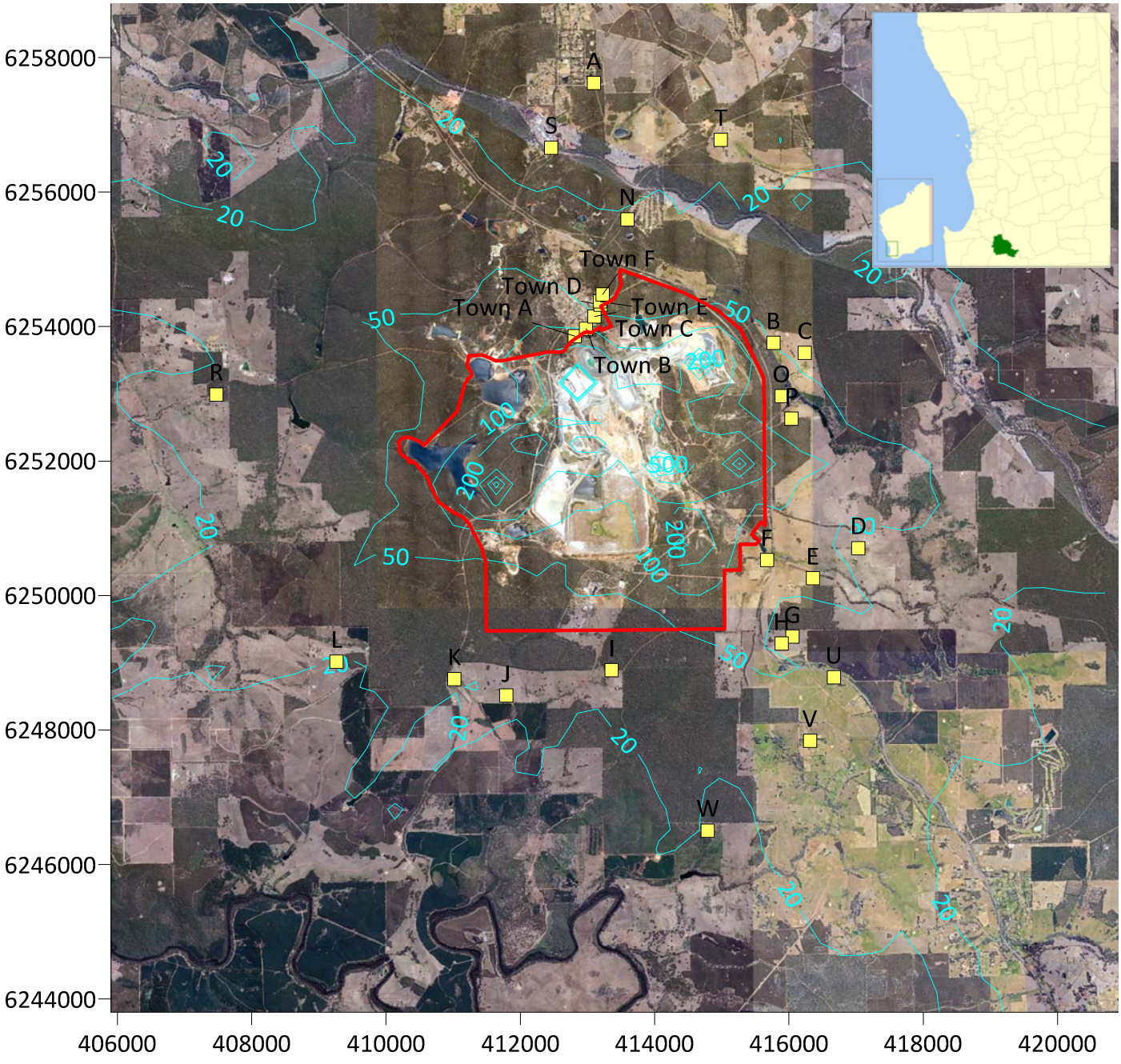
Table 8-3 shows the predicted maximum 24-hour average and annual average concentration of TSP.

Dispersion modelling results for predicted maximum incremental 24-hour average and predicted maximum cumulative 24-hour average are presented as contours in Figure 8-2 and Figure 8-3.

Annual average concentrations are presented as contours in Figure 8-4.

Table 8-3 Predicted maximum 24-hour and annual average concentrations for TSP (µg/m^3)

Receptor	24-hour average maximum		Annual average	
	Incremental	Cumulative	Incremental	Cumulative
Criteria	90		90	
Town A	61	105	13	47
Town B	75	119	13	48
Town C	51	95	10	45
Town D	31	76	7	41
Town E	25	69	5	40
Town F	23	68	4	39
A	24	68	4	39
B	12	56	2	37
C	18	63	2	37
D	51	95	14	49
E	72	116	17	51
F	31	76	11	45
G	69	113	19	53
H	74	118	15	50
I	42	87	9	44
J	41	85	9	44
K	39	84	7	42
L	42	87	6	40
N	18	63	3	38
O	43	87	10	44
P	43	88	8	43
Q	15	59	2	37
R	30	74	6	41
S	22	66	4	39
T	21	65	3	38
U	26	70	3	38
V	18	62	2	37
W	36	80	6	41
HiVol	45	89	12	47



Legend

- Maximum 24-hr average TSP concentration (µg/m^3)
- Proposed expansion mine boundary
- Sensitive receptor

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

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Rev 4	6136950-FIG-8-2

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Maximum incremental 24-hour TSP concentrations

FIGURE 8-2

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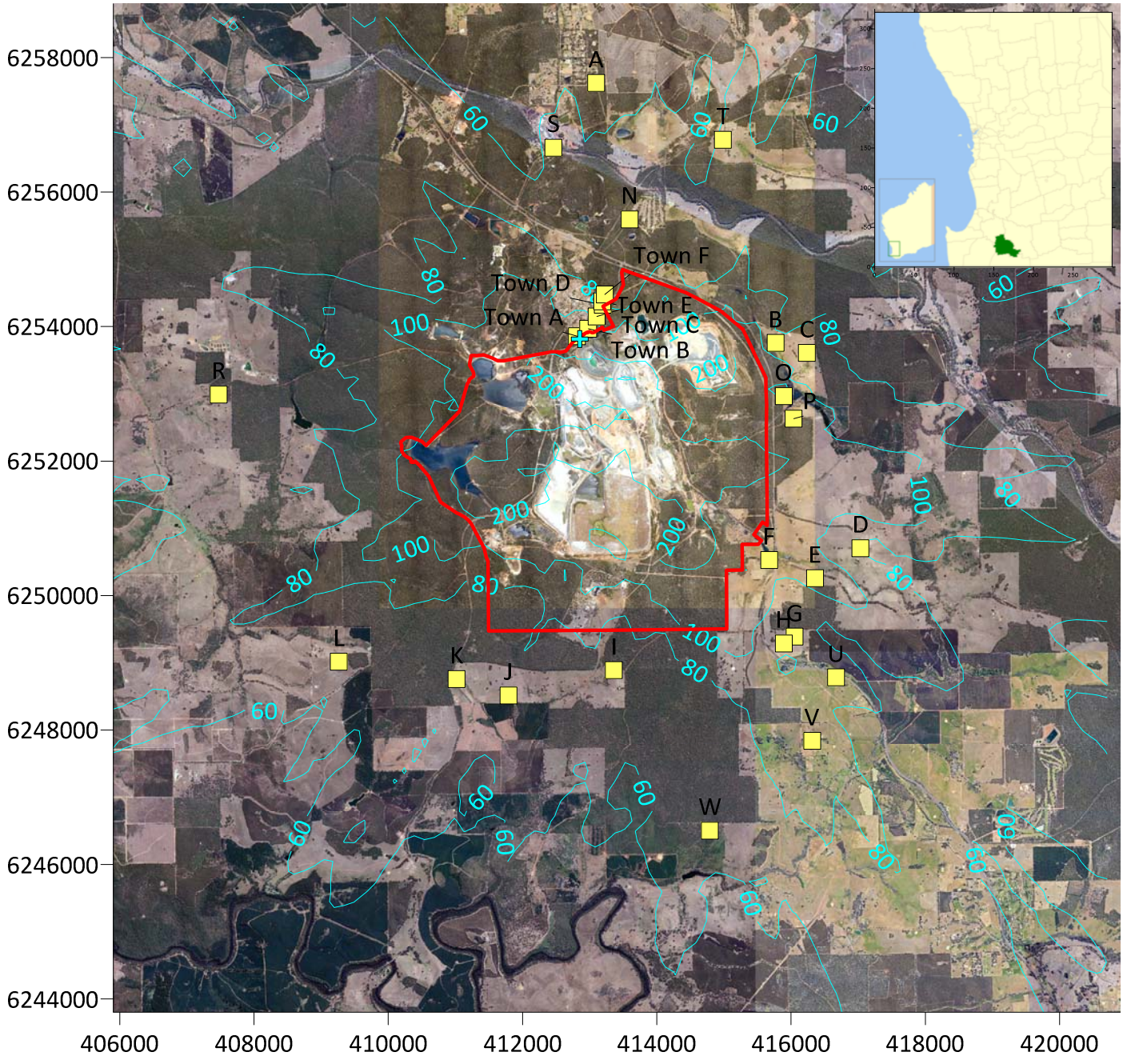

Legend

- Maximum 24-hr average TSP concentration (µg/m^3)
- Proposed expansion mine boundary
- Sensitive receptor

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

DATE	FILE LOCATION:
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Rev 4	6136950-FIG-8-3

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Maximum cumulative 24-hour TSP concentrations

FIGURE 8-3

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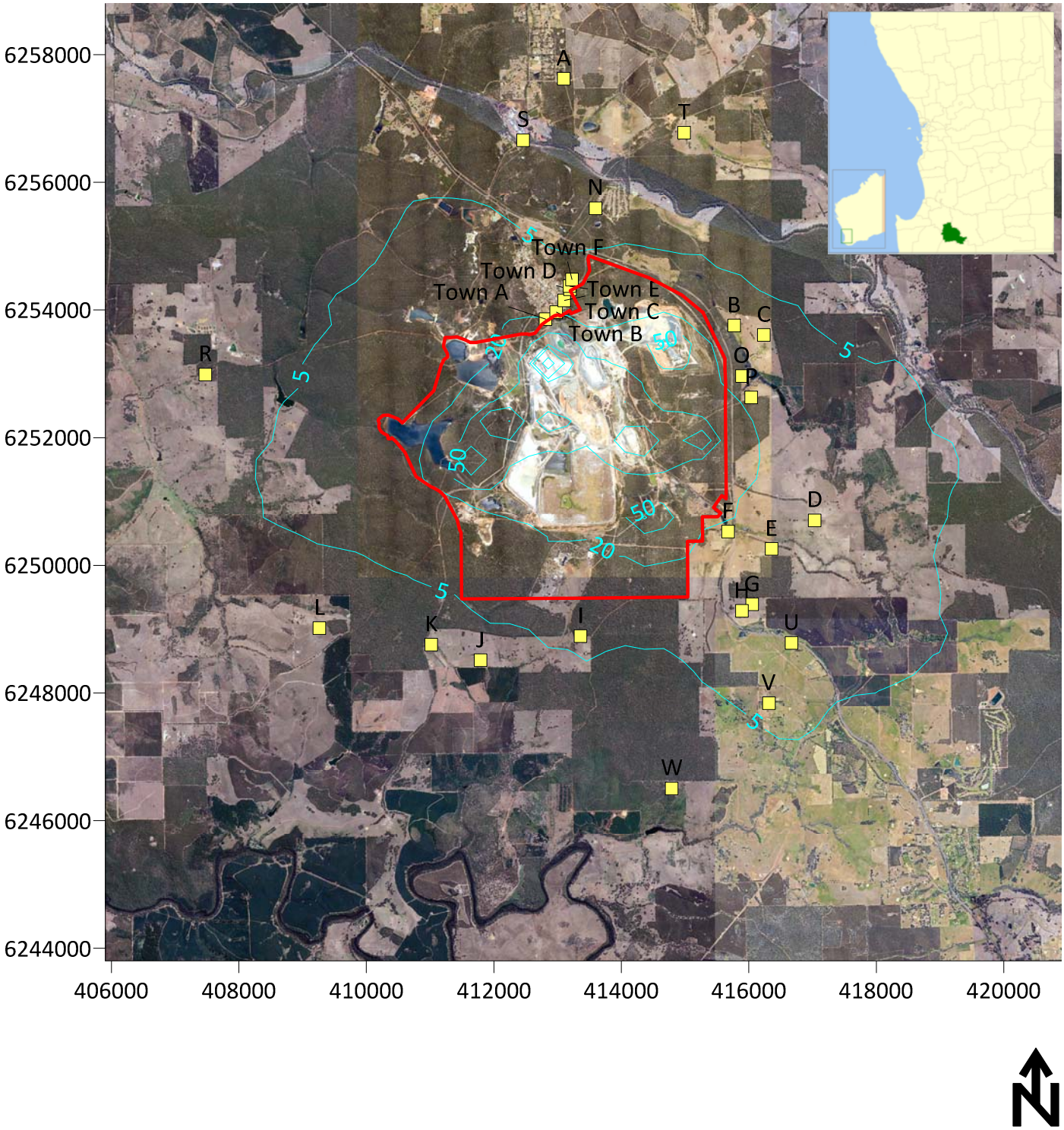

Legend

- Annual average TSP concentration (µg/m^3)
- Proposed expansion mine boundary
- Sensitive receptor

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

DATE	FILE LOCATION:
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Rev 4	6136950-FIG-8-4

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TALISON GREENBUSHES DUST IMPACT ASSESSMENT
AIR QUALITY IMPACT ASSESSMENT

Maximum incremental annual average TSP concentrations

FIGURE 8-4

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8.5.2 PM_{10}

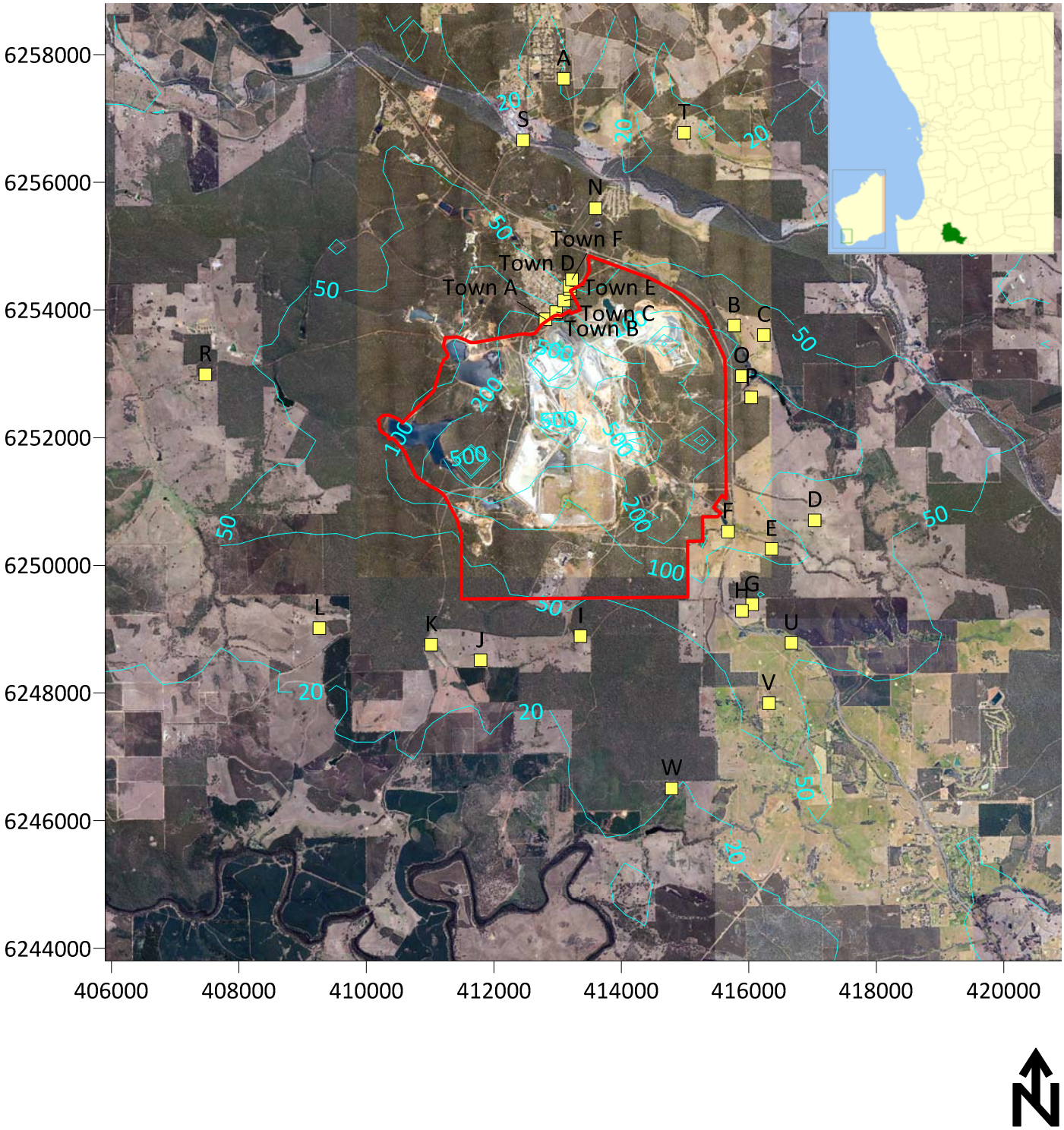
Table 8-4 shows the predicted 1-hour 99.9th percentile, maximum 24-hour and annual average concentration for PM_{10} for incremental (i.e. operational emissions from the expansion project only) and cumulative (including existing mine and regional background concentrations).

Predicted concentrations at the HiVol (Section 5.3.2) have been provided in order to determine licence compliance (Section 4.2) at the monitoring station.

Dispersion modelling results are also presented as contours in Figure 8-5, tod Figure 8-8.

Table 8-4 Predicted 99.9th percentile, maximum 24-hour and annual average concentrations for PM_{10} (µg/m³)

Receptor	1-hour 99.9th percentile		24-hour maximum		Annual average	
	Incremental	Cumulative	Incremental	Cumulative	Incremental	Cumulative
Criteria	80		50		25	
Town A	101	113	21	38	5	19
Town B	108	120	28	46	5	18
Town C	60	73	21	39	3	17
Town D	43	56	13	30	2	16
Town E	37	50	10	28	2	16
Town F	37	49	10	28	1	15
A	31	43	10	27	1	15
B	16	28	5	23	1	15
C	25	37	7	24	1	15
D	73	85	17	35	5	19
E	110	122	30	48	6	20
F	69	81	13	30	4	18
G	120	133	26	43	7	21
H	129	141	27	45	5	19
I	52	64	15	33	3	17
J	64	76	15	33	3	17
K	54	67	16	33	3	16
L	72	84	16	34	2	16
N	25	37	6	24	1	15
O	90	102	17	35	3	17
P	84	96	15	33	3	17
Q	34	46	7	24	1	15
R	41	54	12	30	2	16
S	39	51	9	27	1	15
T	25	37	8	26	1	15
U	39	51	11	28	1	15
V	21	33	7	24	1	15
W	40	52	15	32	2	16
HiVol	101	113	19	37	5	18



Legend

Incremental 99.9th percentile 1-hour PM_{10} concentration (µg/m^3)

Proposed expansion mine boundary

Sensitive receptor

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

DATE	FILE LOCATION:
7.12.2018	G:\61\36950\Tech\Dust Assessment\WP\REV3\FIGURES_28Sept

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Rev 4	6136950-FIG-8-5

TALISON LITHIUM LIMITED
TALISON GREENBUSHES DUST IMPACT ASSESSMENT
AIR QUALITY IMPACT ASSESSMENT

Incremental 99.9th percentile 1-hour PM_{10} concentrations

FIGURE 8-5

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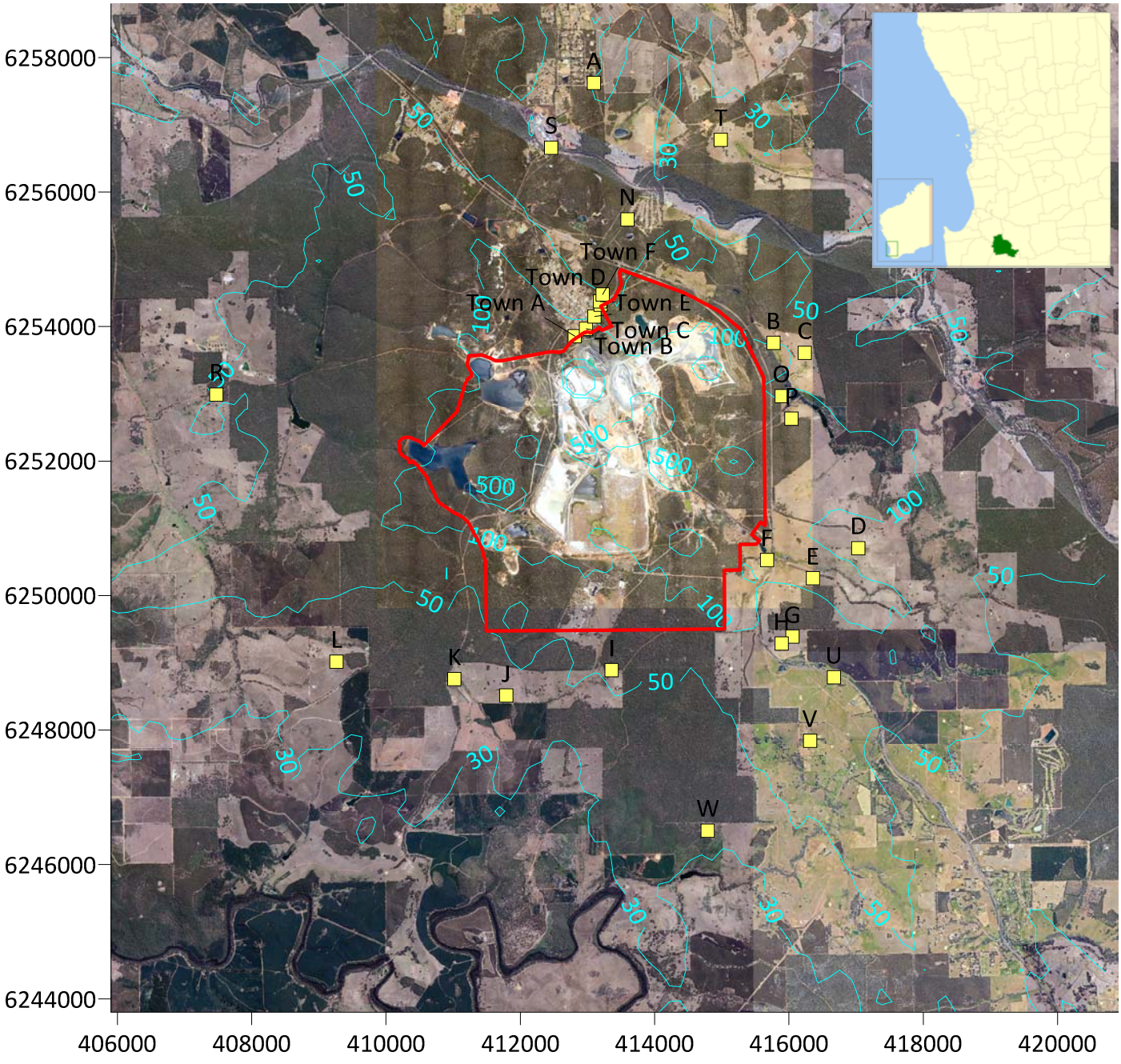

Legend

Incremental 99.9th percentile 1-hour PM_{10} concentration (µg/m^3)

Proposed expansion mine boundary

Sensitive receptor

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

DATE	FILE LOCATION:
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REVISION	DRAWING NO
Rev 4	6136950-FIG-8-6

TALISON LITHIUM LIMITED
TALISON GREENBUSHES DUST IMPACT ASSESSMENT
AIR QUALITY IMPACT ASSESSMENT

Cumulative 99.9th percentile 1-hour PM_{10} concentrations

FIGURE 8-6

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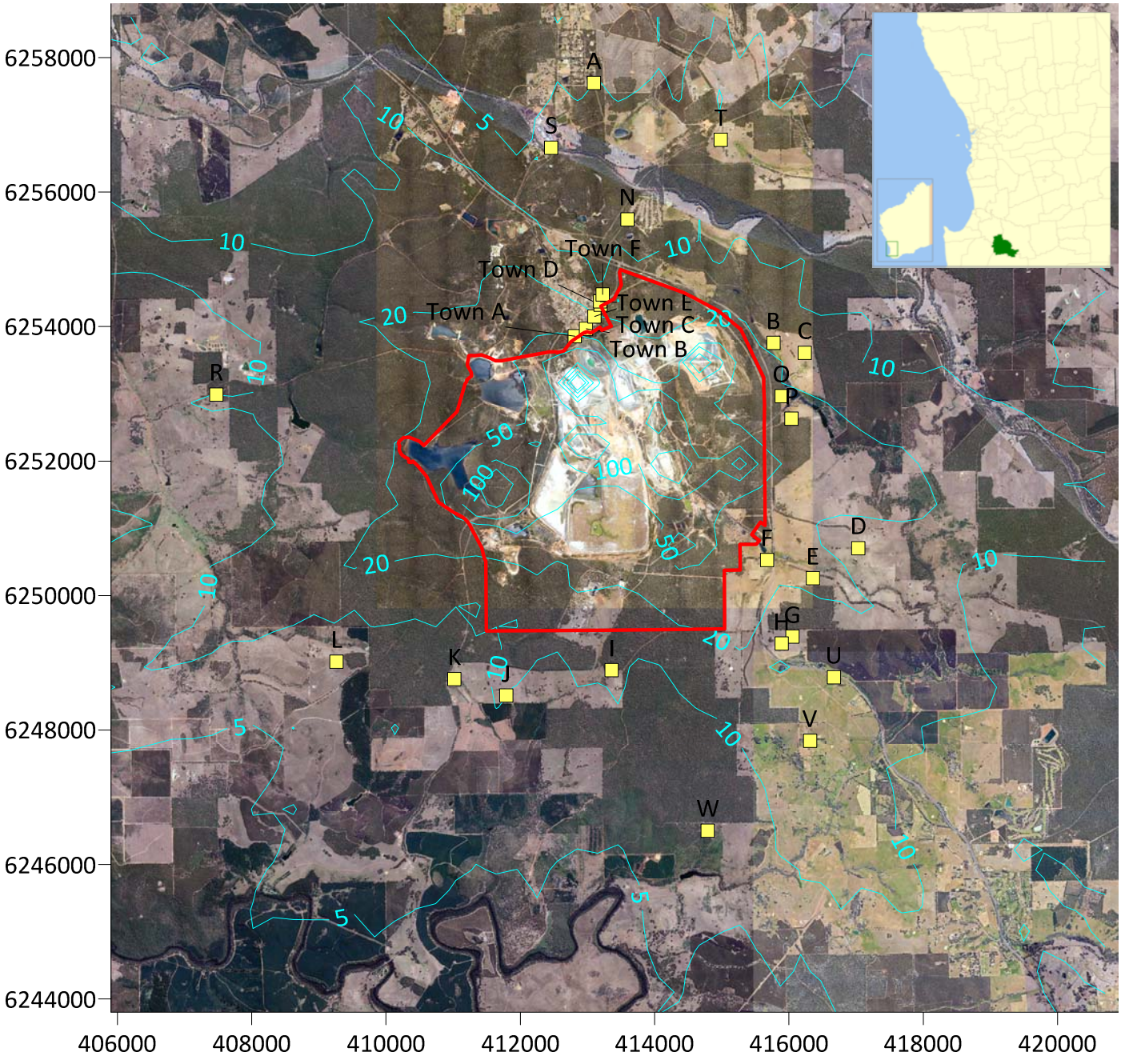


Legend

- Maximum incremental 24-hr average PM_{10} concentration (µg/m^3)
- Proposed expansion mine boundary
- Sensitive receptor

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

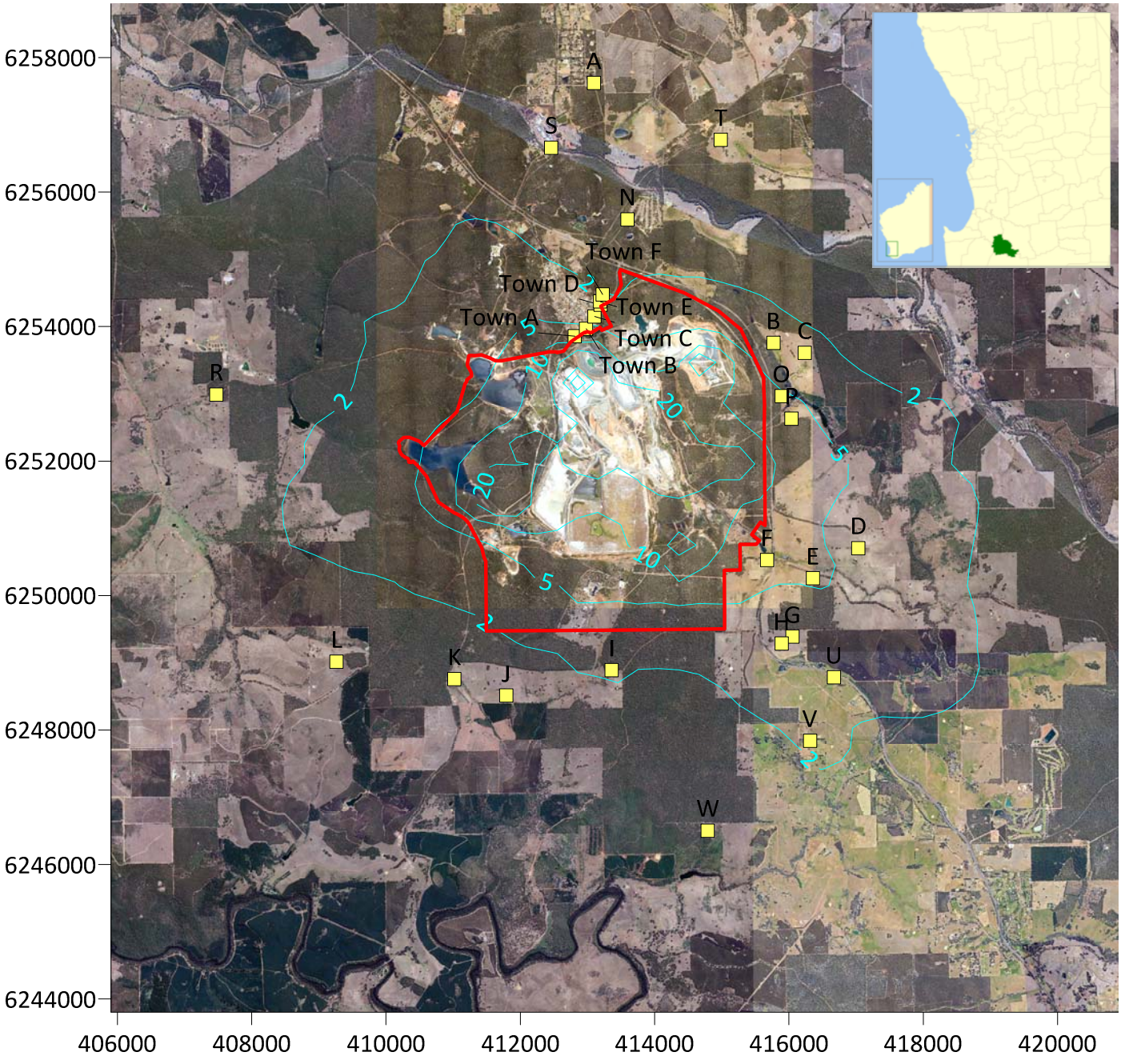
DATE	FILE LOCATION:
7.12.2018	G:\61\36950\Tech\Dust Assessment\WP\REV3\FIGURES_28Sept
REVISION	DRAWING NO
Rev 4	6136950-FIG-8-7

TALISON LITHIUM LIMITED
TALISON GREENBUSHES DUST IMPACT ASSESSMENT
AIR QUALITY IMPACT ASSESSMENT

Maximum incremental 24-hour PM_{10} concentrations

FIGURE 8-7

GHD CLIENTS | PEOPLE | PERFORMANCE



Legend

- Annual average PM_{10} concentration (µg/m^3)
- Proposed expansion mine boundary
- Sensitive receptor

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

DATE	FILE LOCATION:
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Rev 4	6136950-FIG-8-8

TALISON LITHIUM LIMITED
TALISON GREENBUSHES DUST IMPACT ASSESSMENT
AIR QUALITY IMPACT ASSESSMENT

Incremental annual average PM_{10} concentrations

FIGURE 8-8

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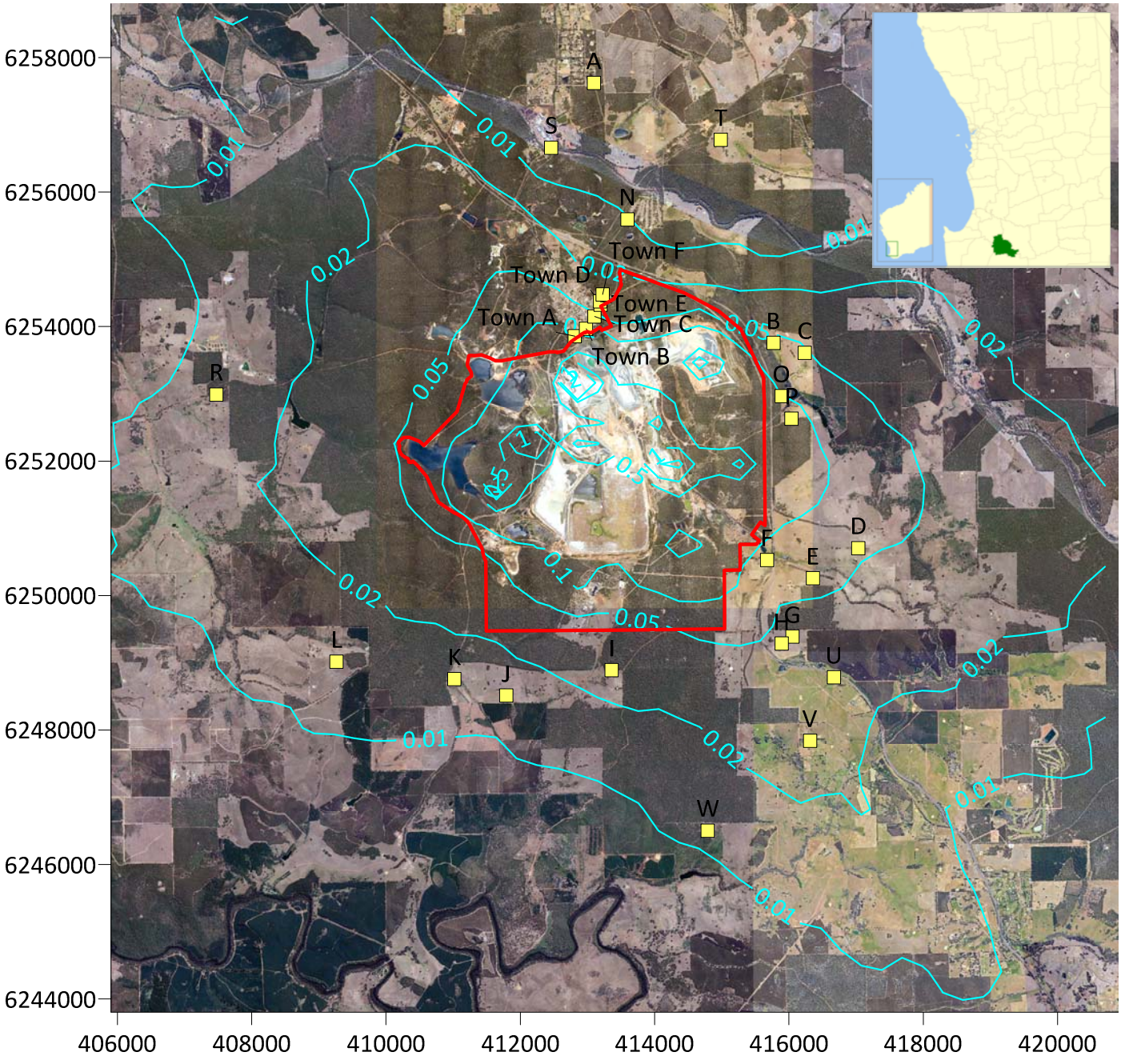
8.5.3 Dust deposition

Table 8-5 shows the predicted maximum total monthly incremental dust deposition rates. As there is no background monitoring data for TSP, incremental results only are included.

Dispersion modelling results are presented as contours in Figure 8-9.

Table 8-5 Maximum total deposited dust per month (g/m²/month)

Receptor	Maximum monthly total
	Incremental
Criteria	4
Town A	0.08
Town B	0.08
Town C	0.05
Town D	0.03
Town E	0.02
Town F	0.01
A	0.01
B	0.00
C	0.00
D	0.06
E	0.06
F	0.09
G	0.12
H	0.05
I	0.09
J	0.06
K	0.04
L	0.04
M	0.03
N	0.03
O	0.01
P	0.03
Q	0.01
R	0.01
S	0.01
T	0.01
U	0.01
V	0.01
HiVol	0.01



Legend

- Maximum incremental monthly average dust deposition levels (g/m²/mth)
- Proposed expansion mine boundary
- Sensitive receptor

0 2000 4000 6000

CREATED:	CHECKED:	APPROVED
GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

DATE	FILE LOCATION:
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REVISION	DRAWING NO
Rev 4	6136950-FIG-8-9

TALISON LITHIUM LIMITED
TALISON GREENBUSHES DUST IMPACT ASSESSMENT
AIR QUALITY IMPACT ASSESSMENT

Maximum incremental monthly dust deposition levels

FIGURE 8-9

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8.6 Discussion of results

Model predicted TSP, PM_{10} and deposited dust concentrations indicate:

- All incremental maximum 24-hour average TSP concentrations are predicted to comply with the criteria at all identified sensitive receptors, as shown in Table 8-3. The highest concentration was 75 µg/m^3 at Town B, or 83% of the TSP 24-hour average criterion.
- The cumulative maximum daily average for TSP concentration are predicted to exceed the air quality criteria at seven receptors (Town A, Town B, Town C, D, E, G and H). The maximum predicted cumulative daily average for TSP was 119 µg/m^3 at Town B, which is 32% higher than the air quality criteria (90 µg/m^3).
- Incremental and cumulative annual average concentrations for TSP are not predicted to exceed the air quality criterion, as shown in Table 8-3. The maximum incremental annual average concentration was 19 µg/m^3, and the cumulative concentration was predicted to be 53 µg/m^3 (G). This predicted cumulative concentration is 59% of the annual average TSP criterion.
- PM_{10} predicted concentrations are shown in Table 8-4. Incremental 1-hour 99.9th percentile concentrations for PM_{10} were predicted to reach a maximum of 129 µg/m^3 at receptor H, which is above the 1-hour criterion (of 80 µg/m^3). The criterion was exceeded at a total of seven receptors (Town A, Town B, E, G, O and P) for predicted incremental concentrations. The criterion was exceed at a total of ten receptors for cumulative results (Town A, Town B, D, E, F, G, H, L, O and P). The maximum predicted cumulative daily average was 141 µg/m^3 at receptor H. Considering these predicted exceedances stringent dust management measures have been recommended (refer to Section 9).
- The 24-hour and annual average PM_{10} concentrations were all predicted to be below the respective criteria (refer to discussion point below).
- The incremental maximum daily average for PM_{10} concentrations is predicted to be 30 µg/m^3 and the cumulative is predicted to be 48 µg/m^3 (E). The predicted cumulative concentration is 90 % of the air quality criteria. The maximum predicted cumulative annual average concentration for PM_{10} was 21 µg/m^3, which is 80% of the air quality criteria (G).
- The predicted maximum 24-hour average concentration for PM_{10} at the HiVol was 37 µg/m^3 (Table 8-4, includes background concentrations). This does not exceed the 24-hour average license condition of 90 µg/m^3.
- The highest deposited dust level was predicted to be 3% of the total monthly criteria of 4 g/m^2/mth (G) (Table 8-5).

From 2020 to 2024 there are plans to excavate and re-mine tailings from TSF1 for reprocessing. The modelled scenario year, 2028 did not include work associated with this activity, and therefore dust impacts have not been considered in modelling. Mining production conducted in 2028 is more than double in comparison to 2020 to 2024 (Table 7-1). As dust impacts were considered to be much larger from mining production in 2028, only 2028 was considered for modelling.

Current dust management strategies associated with mining and loading product (refer Section 9), including wet down ahead of excavation, and ceasing non-essential mining activities during excessively windy conditions and dust control of roads will be appropriately implemented during re-mining of TSF1 tailings for processing.

Results presented in this study show predicted concentrations which are indicative of worst-case scenarios. Predicted 24-hour TSP and 1-hour 99.9th percentile PM_{10} concentrations

exceed the relevant criteria, however this does not necessarily indicate that the site and surrounding local area will experience this level of impact.

An analysis for the exceedances determined that exceedances of the TSP and PM_{10} criterion occurred during periods of low wind speed (2.2 m/s or less) between the hours of 9:00 PM and 5:00 AM during the cooler months of the year (May to September). During these meteorological conditions, the atmosphere experiences calm and stable conditions in the cooler parts of the year, when the sun has not risen far above the horizon and solar heating is relatively week. Therefore there is more a likelihood for higher pollutant concentrations as the pollutants are not dispersed by wind or atmospheric convection. Taking these meteorological conditions into account, weather conditions, particularly during the evening should be included in dust management practises. Refer to Section 9 for recommended dust management practises, noting the night alert for wind speeds less than 2 m/s.

Predicting air pollution is an extremely complex application and there are limitations with advanced dispersion models. Measured air quality concentrations are likely to be highly variable depending on emission levels and the persistence of particular meteorological conditions. The concentrations predicted in this study provide an assessment of worst case impacts from the highest amount of activity. On site management and mitigation measures will be in place such that during adverse conditions, dust management is able to be increased to offset such adverse meteorological conditions.

Furthermore, it is likely that results are conservative, as the model has not included the practical assumption of implementing additional ad-hoc dust management practises when PM_{10} alert concentrations are triggered by the air quality monitoring system (refer to Section 9.2). Therefore in this assessment the model has most likely over-predicted concentrations, in particular PM_{10} 1-hour concentrations, as this is the pollutant and timeframe so susceptible to variability in concentration levels. A recommended dust management framework for the Project is detailed in Section 9.

9. Dust management

A dust management plan provides the framework to ensure management strategies will protect human health and the environment, including amenity impacts resulting from dust emissions. This section gives a dust management framework in reference to the dust assessment above. Current dust management is also considered in this section.

9.1 Dust mitigation

Current dust management practices for the Project are summarised in Table 9-1.

Table 9-1 Current dust mitigation strategies onsite

Activity	Mitigation method
Blasting and drilling	Wet down ahead of blasting
Mining	Application of dust suppressant to haul roads Operate water carts on haul roads and open areas during summer Wet down ahead of blasts Cease non-essential mining activities during excessively windy conditions
TSF	Physical and chemical stability of TSF1 & TSF2 including: TSF1 & TSF2 operated to maintain maximum area of moisture Application of dust suppressant (e.g. Gluon) Application of soft rock to edges TSF1 & TSF2 seeded with ryegrass during winter for coverage over the summer period TSF1 & TSF2 rehabilitate batters as soon as practicable TSF1 & TSF2 has suitable capping and uses windbreaks
Stockpiles	Cover on the finished product stockpiles Sprinklers on the fine ore stockpiles Application of dust suppressant to non-active stockpiles
Crushing	Dust extraction system with wet scrubber Stockpile deposits from crusher are through a telescopic chute Sprinklers on crusher chutes and stockpiles
Conveying	Dust extraction on conveyor transfer stations
Processing plant	Dust extraction systems with bag houses on plant's driers Regular maintenance inspections and repairs on dust extraction ducting and bag houses
Haul/unsealed roads	Applications of dust suppressants to haul roads as required, Operate water carts during dry, windy conditions and summer months
Sealed roads	Onsite road sweeper to clean roads, either weekly or as required.
Trucks	Implement loading and unloading procedures to ensure dust emissions from material handling is minimised
Light vehicles	All site traffic is required to adhere to the site speed limit to minimise dust generated by vehicle movement
Education	All employees are educated regarding dust management onsite in reference to licence conditions, including reporting and best dust management practices
Meteorological conditions	Working in consideration with wind and weather forecasts and dust alerts from the Bureau of Meteorology.
Complaints Register	Talison maintain a register of community complaints (which can potentially relate to dust). Complaints are investigated and mitigation undertaken where necessary.

In consideration of the outcomes of this assessment the following additional management and mitigations strategies are recommended:

- As discussed in Table 9-1, the existing TSF1 and TSF2 already have management practices in place for dust control. Current management measures for dust control at TSF1 & TSF2 should be incorporated into the design of TSF4 to ensure dust emissions are minimised from all TSFs
- Continue the program of progressive rehabilitation (vegetation re-establishment) of landforms, particularly the WRL as soon as practicable
- Configure an alarm on the meteorological monitoring station when a wind speed threshold value of 45 km/h or more is reached.

9.2 Dust monitoring plan

Current dust monitoring practises implemented at the Mine are discussed in Table 9-2.

Table 9-2 Current dust monitoring conducted at the Project

Monitoring	Description
Continuous real time meteorological monitoring	Observations captured at the onsite meteorological station. Observations captured include, rainfall, wind speed and direction, temperature, solar radiation, barometric pressure and relative humidity.
High volume sampling	Conducted at the northern end of the site at the boundary with the Greenbushes town site. This location has been agreed with DWER as a part of the regulatory licence L4247/1991/13. Monitoring is undertaken every second day from November to May and weekly from June to October.
Continuous particulate monitoring	Continuous particulate monitoring by the TEOM conducted at a location west of the TSF2 and Maranup Ford Road since January 2013. Between 1998 and 2013 the TEOM was located east of mine site at a location between TSF1 and the South West Highway.

Recommended additional dust monitoring which should be considered for implementation include:

- Commission and install dust deposition gauges. Suggested evenly spaced locations for the gauges around the site are shown in Figure 9-1.
- Check of meteorological conditions prior to blasting events in consideration of a southerly wind to ensure minimal dust impacts to Greenbushes Township.
- Relocate the site's TEOM to the southeast corner of the WRL, to provide a monitoring network for TSP and PM_{10} (additional or upgraded TEOM may be required to monitor both parameters) between the WRL's operations and receptors located southeast of the Mine, as these receptors were predicted to have exceedances for 24-hour TSP and 1-hour PM_{10}.
- Place an additional TEOM at the boundary of Greenbush's township near receptor Town B to provide a monitoring network for TSP and PM_{10} between the Mine operations and the Greenbushes Township, where exceedance of the 24-hour TSP and 1-hour PM_{10} are predicted to occur. .
- The TEOMs can be configured with an alarm system, which can be triggered when set levels (outlined in Table 9-3) are exceeded. Following this, dust control management should be actioned, which could include ceasing non-essential mining activities during poor atmospheric conditions. All recommended trigger actions are shown in Table 9-4.
- Automated remote warning system that can send simultaneous emails and SMS alerts when TSP and PM_{10} concentrations exceed trigger values to nominated site personnel.

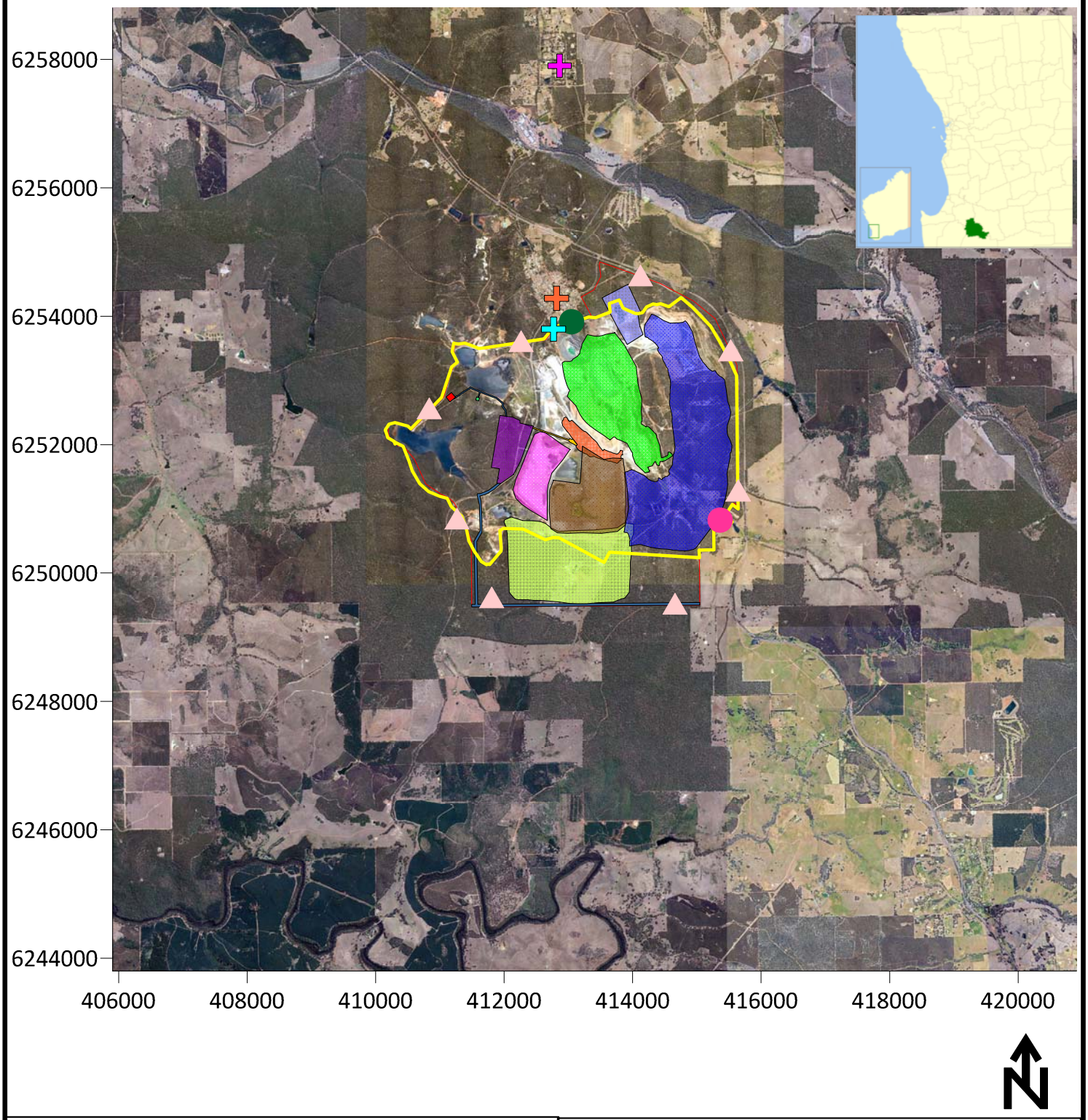
- Undertake training for nominated individuals to understand dust triggers and the response measures. Response measures for an alert are outlined in Table 9-4. It should be noted that if TSP and PM_{10} concentrations are above the screening alert levels it does not, necessarily indicate an exceedance, but does act as a trigger for additional dust mitigation and management.

Table 9-3 Recommended monitoring alert levels

Parameter	Normal	Alert Level
TSP (24-hour average)	<20 µg/m^3	>80 µg/m^3
PM_{10} (1 hour average)	<30 µg/m^3	>70 µg/m^3
Meteorological conditions – alert triggered when both wind speed and direction alert levels occur		
Wind speed	4 m/s (day)	Average hourly wind speed >5 m/s
	3 m/s (night)	Average hourly wind speed <2 m/s
Wind direction	NA	TEOM-1: 70 - 160°
		TEOM-2: 315 - 45°

Table 9-4 Trigger Action – list of potential responses

	Normal	Response to Alert
Dust Monitor Alarm (PM_{10})	Continue work in accordance with dust management procedures	• Notify nominated site personnel. • Review site meteorological conditions and monitoring results. • Review operations and consider additional dust mitigation which can be implemented. • Cease or move activities, if required. • Consider aerial application of dust suppressant. • Spray ore before loading and dumping into haul trucks. • Engage any additional water carts. • Continue or initiate sprinkler operation on stockpile area.



Legend

- TSF2
- Explosives Batch Facility
- Magazine
- Pit LOM 3 Plants
- CPG3 & 4
- Proposed mine boundary
- Existing mine boundary
- Greenbushes Township
- Greenbushes North
- Existing HiVol
- Recommended dust deposition gauge locations
- Linear Infrastructure Corridor
- TSF1
- Mine Services Area
- Magazine
- Floyds Waste Dump
- Conveyor
- Run of Mine
- TSF4
- TEOM 1
- TEOM 2

0 2000 4000 6000

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GF	AST	JF

HORIZONTAL DATUM: WGS 84 PROJECTION: UTM Zone 50 H
HEIGHT DATUM: m AGL

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REVISION	DRAWING NO
Rev 4	6136950-FIG-9-1

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AIR QUALITY IMPACT ASSESSMENT

Recommended dust monitoring locations

FIGURE 9-1

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10. Conclusion

The dust impact assessment has evaluated the potential dust impacts from the proposed expansions at the existing Greenbushes Lithium Mine, located approximately 250 km south of Perth. The expansion will increase production at the Mine from the current approved production rate of 4.7 Mtpa to 9.5 Mtpa of spodumene ore to produce up to 2.3 Mtpa of lithium mineral concentrate.

The year 2028 was considered for predictive air dispersion modelling, as this year represents the maximum amount of activity at the site and thus would have the potential to result in the highest dust emissions. Nearby sensitive receptors were identified and an air dispersion model was developed and used to predict incremental ground level concentrations of dust resulting from the mine expansion as well as cumulative (signal from mine plus background) ground level concentrations for the receptors identified.

The assessment used AERMOD to predict TSP, PM_{10} and deposited dust concentrations from the proposed expansion of the Mine.

Predictive air dispersion modelling indicated:

- The predicted incremental maximum daily average and the incremental and cumulative annual average for TSP were below the relevant air quality criteria for all sensitive receptors. Exceedances at seven receptors were predicted for the cumulative maximum daily average.
- Exceedances at seven sensitive receptors were predicted for the incremental 99.9th percentile 1-hour PM_{10} concentrations. The cumulative 99.9th percentile 1-hour PM_{10} concentrations were predicted to exceed the air quality criteria at ten sensitive receptors. Exceedances were attributed to low wind speeds.
- Predicted cumulative maximum daily average and annual average concentrations were below the relevant air quality criteria for all sensitive receptors.
- Concentrations are not predicted to exceed the 24-hour average license condition of 90 µg/m^3 at the HiVol located north of the site.
- Dust deposition rates are predicted to be below the monthly criteria.

Dust management and mitigation methods have been included in this assessment. Implementation of a program of real time dust monitoring and trigger levels to implement additional real-time dust management measures, including trigger alerts, will reduce the likelihood of exceedances of air quality criteria.

11. References

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Appendices

Appendix A – AERMOD output file

```
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** AERMOD Input Produced by:
** AERMOD View Ver. 9.2.0
** Lakes Environmental Software Inc.
** Date: 8/06/2018
** File: G:\61\36950\Tech\Dust Assessment\04. Dispersion\PM10\TalLith_nogrid.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
  TITLEONE C:\TalLith\TalLith.isc
  MODELOPT CONC VECTORWS
  AVERTIME 1 24 ANNUAL
  POLLUTID PM_10
  RUNORNOT RUN
  ERRORFIL TalLith_nogrid.err
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
```

SO STARTING

** Source Location **

** Source ID - Type - X Coord. - Y Coord. **

LOCATION 1 VOLUME 413702.000 6252672.000 308.240

** DESCRSRC Drilling

LOCATION 2 VOLUME 413702.000 6252672.000 308.240

** DESCRSRC Blasting

LOCATION 3 VOLUME 413103.000 6253097.000 325.920

** DESCRSRC Excavators

LOCATION 4 VOLUME 413897.000 6252834.000 260.810

** DESCRSRC Excavators

LOCATION 5 VOLUME 413541.000 6252417.000 317.230

** DESCRSRC Excavators

LOCATION 6 VOLUME 414209.000 6251837.000 236.120

** DESCRSRC Excavators

LOCATION 7 VOLUME 413103.000 6253097.000 325.920

** DESCRSRC Loaders

LOCATION 8 VOLUME 413897.000 6252834.000 260.810

** DESCRSRC Loaders

LOCATION 9 VOLUME 413541.000 6252417.000 317.230

** DESCRSRC Loaders

LOCATION 10 VOLUME 414209.000 6251837.000 236.120

** DESCRSRC Loaders

LOCATION 11 VOLUME 414250.000 6251978.000 246.160

** DESCRSRC Rockbreakers

LOCATION 12 VOLUME 413973.000 6252620.000 256.230

** DESCRSRC Rockbreakers

LOCATION 13 VOLUME 412987.000 6252210.000 277.470

** DESCRSRC Rockbreakers

LOCATION 14 VOLUME 413104.000 6252020.000 273.840

** DESCRSRC Conveyor transfer point 1

LOCATION 15 VOLUME 412404.000 6252262.000 265.640

** DESCRSRC Conveyor transfer point 2

LOCATION 16 VOLUME 412692.000 6252971.000 287.550

** DESCRSRC 3 stage crusher (for CPG 1 & CPG2)

LOCATION 17 VOLUME 412123.000 6252207.000 257.000

** DESCRSRC 2 stage crushing (for CPG3 & CPG 4)

LOCATION 18 VOLUME 412928.000 6253174.000 319.760

** DESCRSRC ROM stockpile (for TIL, CPG1 & CPG2)

LOCATION 19 VOLUME 413048.000 6252252.000 283.040

** DESCRSRC Fine ore stockpile - CPG3 & CPG 4

LOCATION 20 VOLUME 411964.000 6251901.000 265.910

** DESCRSRC Final Product Stockpile - CPG3 & CPG 4

LOCATION 21 VOLUME 411649.000 6251575.000 259.690

** DESCRSRC ROM stockpile (for CPG3 & CPG4)

LOCATION 22 VOLUME 413636.000 6253298.000 289.130

** DESCRSRC Dozer - pits

LOCATION 23 VOLUME 414185.000 6251979.000 248.830

** DESCRSRC Dozer - pits

LOCATION 24 VOLUME 414784.000 6253373.000 298.000

** DESCRSRC Dozer - waste

LOCATION 25 VOLUME 415171.000 6252015.000 273.520

** DESCRSRC Dozer - waste

LOCATION 26 VOLUME 414428.000 6250782.000 267.610

** DESCRSRC Dozer - waste

LOCATION 27 VOLUME 415031.000 6253549.000 273.100

** DESCRSRC Haultruck1 - north end to waste dump

LOCATION 28 VOLUME 414704.000 6253963.000 277.030

** DESCRSRC Haultruck2 - north end to waste dump

LOCATION 29 VOLUME 414100.000 6253671.000 301.170

** DESCRSRC Haultruck3 - north end to waste dump

LOCATION 30 VOLUME 413954.000 6253554.000 307.310

** DESCRSRC Haultruck4 - north end to waste dump

LOCATION 31 VOLUME 414271.000 6253468.000 305.030

** DESCRSRC Haultruck5 - north end to waste dump

LOCATION 32 VOLUME 414070.000 6253379.000 309.120

** DESCRSRC Haultruck6 - north end to waste dump

LOCATION 33 VOLUME 413517.000 6253705.000 323.320

** DESCRSRC Haultruck7 - north end to waste dump

LOCATION 34 VOLUME 412497.000 6253262.000 284.090

** DESCRSRC Haultruck8 - south end to processing facility

LOCATION 35 VOLUME 412480.000 6252874.000 267.580

** DESCRSRC Haultruck9 - south end to processing facility

LOCATION 36 VOLUME 412506.000 6252553.000 273.050

** DESCRSRC Haultruck10 - south end to processing facility

LOCATION 37 VOLUME 412883.000 6252727.000 307.410

** DESCRSRC Haultruck11 - south end to processing facility

LOCATION 38 VOLUME 412357.000 6251781.000 252.100

** DESCRSRC Haultruck12 - south end to processing facility

LOCATION 39 VOLUME 412106.000 6251292.000 237.000

** DESCRSRC Haultruck13 - south end to processing facility

LOCATION 40 VOLUME 412704.000 6250747.000 264.330

** DESCRSRC Haultruck14 - south end to processing facility

LOCATION 41 VOLUME 412696.000 6251466.000 260.070

** DESCRSRC Haultruck15 - south end to processing facility

LOCATION 42 VOLUME 413021.000 6251924.000 268.370

** DESCRSRC Haultruck16 - south end to processing facility

LOCATION 43 VOLUME 413139.000 6252398.000 311.780

** DESCRSRC Haultruck17 - south end to processing facility

LOCATION 44 VOLUME 413405.000 6252114.000 301.470

** DESCRSRC Haultruck18 - south end to processing facility

LOCATION 45 VOLUME 413676.000 6251863.000 290.230

** DESCRSRC Haultruck19 - south end to processing facility

LOCATION 46 VOLUME 413872.000 6251792.000 276.240

** DESCRSRC Haultruck20 - south end to processing facility

LOCATION 47 VOLUME 413916.000 6251316.000 270.400

** DESCRSRC Haultruck21 - south end to processing facility

LOCATION 48 VOLUME 413901.000 6250863.000 268.800

** DESCRSRC Haultruck22 - south end to processing facility

LOCATION 49 VOLUME 413901.000 6250863.000 268.800

** DESCRSRC Haultruck23 - south end to processing facility

LOCATION 50 VOLUME 414522.000 6251639.000 257.720

** DESCRSRC Haultruck24 - south end to processing facility

LOCATION 51 VOLUME 414502.000 6252041.000 275.570

** DESCRSRC Haultruck25 - south end to processing facility

LOCATION 52 VOLUME 414324.000 6252377.000 299.530

** DESCRSRC Haultruck26 - south end to processing facility

LOCATION 53 VOLUME 412928.000 6253174.000 319.760

** DESCRSRC WE - ROM stockpile

LOCATION 54 VOLUME 413048.000 6252252.000 283.040

** DESCRSRC WE - ROM stockpile

LOCATION 55 VOLUME 411964.000 6251901.000 265.910

** DESCRSRC WE - Fine ore stockpile

LOCATION 56 VOLUME 411649.000 6251575.000 259.690

** DESCRSRC WE - Final Product Stockpile

LOCATION 57 VOLUME 414129.000 6252029.000 248.340

** DESCRSRC WE - Pits1

LOCATION 58 VOLUME 413165.000 6252893.000 328.530

** DESCRSRC WE - Pits1

LOCATION 59 VOLUME 412668.000 6250295.000 278.100

** DESCRSRC WE - TSF

LOCATION 60 VOLUME 415171.000 6252015.000 273.520

** DESCRSRC WE -Waste dump

** Source Parameters **

SRCPARAM 1	0.0129166667	1.000	1.163	0.465
SRCPARAM 2	2.4	1.000	1.163	0.465
SRCPARAM 3	0.6326103501	1.000	0.698	0.465
SRCPARAM 4	0.6326103501	1.000	0.698	0.465
SRCPARAM 5	0.6326103501	1.000	0.698	0.465
SRCPARAM 6	0.6326103501	1.000	0.698	0.465
SRCPARAM 7	0.6326103501	1.000	0.698	0.465
SRCPARAM 8	0.6326103501	1.000	0.698	0.465
SRCPARAM 9	0.6326103501	1.000	0.698	0.465
SRCPARAM 10	0.6326103501	1.000	1.304	0.465
SRCPARAM 11	0.8434804668	1.000	0.698	0.465
SRCPARAM 12	0.8434804668	1.000	1.304	0.465
SRCPARAM 13	0.8434804668	1.000	1.304	0.465
SRCPARAM 14	0.0117786022	2.000	0.435	0.930
SRCPARAM 15	0.0117786022	3.000	0.435	0.930
SRCPARAM 16	0.045582826	2.500	4.348	1.163
SRCPARAM 17	0.1426940639	2.500	4.348	1.163
SRCPARAM 18	0.9481227803	1.000	0.698	0.465
SRCPARAM 19	0.0042808219	1.000	0.698	0.465
SRCPARAM 20	0.0582191781	1.000	0.698	0.465
SRCPARAM 21	1.4840182648	1.000	0.698	0.465
SRCPARAM 22	0.3416666667	1.000	0.698	0.465
SRCPARAM 23	0.3416666667	1.000	0.698	0.465
SRCPARAM 24	0.4783333333	1.000	0.698	0.465
SRCPARAM 25	0.4783333333	1.000	0.698	0.465
SRCPARAM 26	0.4783333333	1.000	0.698	0.465
SRCPARAM 27	0.0081106815	1.000	0.410	0.465
SRCPARAM 28	0.0081106815	1.000	0.410	0.465
SRCPARAM 29	0.0081106815	1.000	0.410	0.465
SRCPARAM 30	0.0081106815	1.000	0.410	0.465
SRCPARAM 31	0.0081106815	1.000	0.410	0.465

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SRCPARAM 32       0.0081106815  1.000   0.410   0.465
SRCPARAM 33       0.0081106815  1.000   0.410   0.465
SRCPARAM 34       0.0081106815  1.000   0.410   0.465
SRCPARAM 35       0.0234074503  1.000   0.410   0.465
SRCPARAM 36       0.0234074503  1.000   0.410   0.465
SRCPARAM 37       0.0234074503  1.000   0.410   0.465
SRCPARAM 38       0.0234074503  1.000   0.410   0.465
SRCPARAM 39       0.0234074503  1.000   0.410   0.465
SRCPARAM 40       0.0234074503  1.000   0.410   0.465
SRCPARAM 41       0.0234074503  1.000   0.410   0.465
SRCPARAM 42       0.0234074503  1.000   0.410   0.465
SRCPARAM 43       0.0234074503  1.000   0.410   0.465
SRCPARAM 44       0.0234074503  1.000   0.410   0.465
SRCPARAM 45       0.0234074503  1.000   0.410   0.465
SRCPARAM 46       0.0234074503  1.000   0.410   0.465
SRCPARAM 47       0.0234074503  1.000   0.410   0.465
SRCPARAM 48       0.0234074503  1.000   0.410   0.465
SRCPARAM 49       0.0234074503  1.000   0.410   0.465
SRCPARAM 50       0.0234074503  1.000   0.410   0.465
SRCPARAM 51       0.0234074503  1.000   0.410   0.465
SRCPARAM 52       0.0234074503  1.000   0.410   0.465
SRCPARAM 53       0.0039269908  2.500   1.163   1.163
SRCPARAM 54       0.0039269908  2.500   1.163   1.163
SRCPARAM 55       0.0117809725  2.500   1.163   1.163
SRCPARAM 56       0.0017671459  2.500   1.163   1.163
SRCPARAM 57       0.2402777778  0.500   46.512   0.116
SRCPARAM 58       0.2402777778  0.500   46.512   0.116
SRCPARAM 59       0.0604333333  0.500   93.023   0.116
SRCPARAM 60       0.0828333333  0.500  209.302   0.116
SRCGROUP ALL

SO FINISHED
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**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
  GRIDCART UCART1 STA
          XYINC 405905.00 75 200.00 6243802.00 75 200.00
          ELEV   1  296.60  275.30  241.60  215.30  258.20  254.90
          ELEV   1  243.20  221.50  176.00  173.50  200.30  236.50
          ELEV   1  250.50  228.70  198.20  184.90  150.10  139.10
          ELEV   1  148.20  112.00  112.90  111.10  119.10  125.40
          ELEV   1  145.90  153.30  149.30  119.30  118.60  129.90
          ELEV   1  168.20  182.80  182.50  210.10  228.90  210.00
          ELEV   1  191.10  157.50  115.80  126.00  133.60  183.40
          ELEV   1  235.90  235.10  245.90  243.10  258.90  254.30
          ELEV   1  264.80  262.60  271.40  290.00  303.30  315.40
          ELEV   1  313.00  306.40  297.20  279.10  264.40  257.90
          ELEV   1  241.80  230.30  223.60  216.80  203.00  204.30
          ELEV   1  225.90  206.10  193.40  190.60  170.60  190.20
          ELEV   1  209.20  223.90  248.50
          ELEV   2  258.20  261.90  233.60  187.50  231.40  212.40
          ELEV   2  183.20  167.30  142.30  189.60  204.50  230.00
          ELEV   2  221.70  199.50  153.50  140.80  131.90  110.00
          ELEV   2  124.50  104.90  110.80  114.30  122.10  134.50
          ELEV   2  144.80  181.20  160.30  118.70  118.20  143.60
          ELEV   2  137.60  135.10  173.70  197.30  226.50  236.00
          ELEV   2  224.70  202.70  166.90  119.00  119.70  158.70
          ELEV   2  185.50  202.30  220.00  229.60  244.80  244.90
          ELEV   2  257.70  268.80  267.10  288.80  301.70  311.30
```

ELEV 2 317.70 311.80 304.30 299.30 280.40 269.70

ELEV 2 258.50 244.60 236.20 221.40 221.90 198.80

ELEV 2 193.90 187.60 181.60 186.60 173.50 193.90

ELEV 2 227.40 237.20 250.10

ELEV 3 227.80 211.30 186.50 165.00 194.30 182.30

ELEV 3 148.00 145.60 155.20 170.20 195.40 213.80

ELEV 3 208.50 150.60 124.70 114.30 116.80 108.50

ELEV 3 112.00 115.40 110.00 108.50 139.80 151.30

ELEV 3 188.20 164.90 148.10 111.00 114.80 134.40

ELEV 3 116.60 123.20 151.30 167.00 181.10 218.80

ELEV 3 192.00 177.00 164.40 136.50 112.60 140.90

ELEV 3 185.70 225.10 235.20 235.90 251.10 252.60

ELEV 3 274.60 291.50 288.30 289.40 301.00 309.10

ELEV 3 318.90 319.30 316.50 308.30 277.00 276.00

ELEV 3 275.90 267.10 248.00 240.50 230.80 219.20

ELEV 3 202.60 198.90 194.70 177.80 178.60 203.90

ELEV 3 222.90 248.60 263.30

ELEV 4 178.50 154.60 138.50 134.00 159.70 167.20

ELEV 4 130.50 127.40 124.50 168.30 200.90 205.50

ELEV 4 181.10 138.70 109.50 153.20 157.50 119.00

ELEV 4 122.00 120.90 115.20 108.20 138.50 153.70

ELEV 4 156.10 155.20 132.00 107.50 134.30 121.80

ELEV 4 114.90 117.10 140.70 148.30 167.80 189.60

ELEV 4 176.80 149.50 142.00 124.20 137.00 172.60

ELEV 4 216.00 245.40 258.70 272.50 282.30 272.40

ELEV 4 271.40 294.40 305.80 308.40 314.20 303.40

ELEV 4 300.30 302.50 303.20 288.10 266.90 271.10

ELEV 4 275.20 259.10 246.40 237.20 236.20 237.00

ELEV 4 224.30 210.00 185.00 181.30 197.40 213.10

ELEV 4 215.90 241.70 251.00

ELEV 5 128.00 109.40 108.00 110.50 119.30 139.70

ELEV 5 107.40 115.90 109.70 122.30 169.30 213.30

ELEV 5 183.70 136.20 120.80 144.60 169.10 144.20

ELEV 5 123.40 125.60 109.30 105.50 112.70 134.20

ELEV 5 155.50 132.30 127.50 122.40 140.10 117.80

ELEV 5 132.50 123.20 119.80 112.70 118.90 160.60

ELEV 5 154.60 136.00 127.50 132.80 172.70 216.50

ELEV 5 212.70 244.90 269.10 253.10 265.70 265.90

ELEV 5 289.30 281.80 285.00 308.20 308.00 295.80

ELEV 5 280.00 281.20 280.30 259.50 265.70 279.50

ELEV 5 278.40 258.00 237.50 226.60 223.20 223.70

ELEV 5 216.70 199.10 182.20 193.80 210.00 222.20

ELEV 5 228.60 224.60 219.70

ELEV 6 106.10 129.00 160.70 160.90 126.00 110.30

ELEV 6 125.00 160.00 130.10 108.70 154.80 213.00

ELEV 6 209.50 162.70 121.00 136.50 166.40 162.00

ELEV 6 171.90 160.40 138.70 131.70 120.30 156.70

ELEV 6 131.50 109.40 120.90 120.10 147.80 114.80

ELEV 6 129.40 148.40 146.90 134.60 131.10 122.90

ELEV 6 140.40 111.10 143.10 162.00 195.40 221.90

ELEV 6 232.50 223.10 231.30 232.00 246.90 268.10

ELEV 6 269.50 250.70 269.70 284.90 282.00 279.10

ELEV 6 265.40 244.10 234.80 241.90 261.60 267.90

ELEV 6 269.90 270.00 253.10 247.40 216.20 207.50

ELEV 6 207.80 189.60 185.70 192.60 200.20 198.20

ELEV 6 208.40 211.10 210.10

ELEV 7 142.30 183.90 232.10 234.10 190.50 148.70

ELEV 7 173.20 189.80 130.40 110.30 159.30 213.30

ELEV 7 213.60 189.80 129.10 129.40 163.60 177.30

ELEV 7 196.30 198.00 155.10 121.80 148.10 158.20

ELEV 7 111.50 131.70 135.30 154.30 152.00 108.60

ELEV 7 128.20 150.70 179.00 164.00 125.40 134.70

ELEV 7 133.70 123.70 126.00 135.60 156.30 208.00

ELEV 7 207.30 199.40 209.00 232.90 237.00 240.50

ELEV 7 256.50 233.50 239.20 271.70 271.50 266.00

ELEV 7 244.90 231.10 225.50 244.00 264.40 268.00

ELEV 7 265.20 272.40 268.50 262.00 245.40 209.10

ELEV 7 209.30 209.10 220.40 197.70 203.60 201.00

ELEV 7 210.80 219.50 237.20

ELEV 8 173.80 246.90 290.60 294.40 241.50 197.50

ELEV 8 241.20 202.50 137.10 111.20 163.40 173.70

ELEV 8 162.50 161.80 144.10 111.50 131.80 155.00

ELEV 8 192.60 219.30 190.80 145.70 143.30 159.10

ELEV 8 111.40 111.40 115.00 109.80 114.60 117.90

ELEV 8 137.20 160.10 196.90 169.30 122.70 131.30

ELEV 8 147.60 116.70 117.00 121.20 145.60 194.20

ELEV 8 188.40 174.40 210.10 195.30 176.20 193.30

ELEV 8 236.20 216.90 246.40 259.80 258.10 263.00

ELEV 8 227.10 209.00 224.70 244.50 244.70 246.10

ELEV 8 258.00 261.60 264.90 242.90 227.50 224.30

ELEV 8 216.60 215.20 234.30 230.20 236.20 228.70

ELEV 8 218.70 256.70 273.10

ELEV 9 197.70 266.20 297.40 280.50 262.50 255.00

ELEV 9 279.60 216.40 144.90 101.90 115.00 132.70

ELEV 9 123.20 116.70 123.60 105.20 145.30 143.80

ELEV 9 177.50 205.30 231.90 176.50 145.70 174.80

ELEV 9 135.30 131.80 117.40 109.10 114.20 125.60

ELEV 9 162.50 184.50 207.80 175.10 123.80 120.00

ELEV 9 116.00 128.80 118.90 115.30 146.50 163.40

ELEV 9 154.00 166.50 194.90 147.70 135.70 169.30

ELEV 9 205.10 207.70 240.80 215.90 227.70 237.00

ELEV 9 197.80 212.30 241.90 239.70 230.50 216.90

ELEV 9 243.00 268.90 265.60 245.10 253.10 237.30

ELEV 9 229.10 219.10 238.60 268.30 265.80 263.70

ELEV 9 213.60 251.50 279.50

ELEV 10 189.00 256.50 287.30 283.70 293.70 293.70

ELEV 10 286.80 244.70 186.70 137.40 117.40 105.00

ELEV 10 110.00 130.90 112.90 114.80 126.00 134.80

ELEV 10 152.70 170.80 204.90 203.50 175.50 193.20

ELEV 10 195.80 167.70 133.50 146.70 120.80 124.10

ELEV 10 175.40 200.50 210.70 181.90 138.50 121.30

ELEV 10 121.40 111.00 110.40 122.10 113.20 118.50

ELEV 10 118.40 144.10 159.90 133.80 129.30 142.70

ELEV 10 156.10 211.30 213.20 182.70 198.80 221.60

ELEV 10 197.00 182.70 221.00 217.70 209.60 215.10

ELEV 10 234.70 257.80 264.20 259.40 271.40 254.10

ELEV 10 234.30 237.00 243.10 254.60 265.30 266.30

ELEV 10 227.80 248.20 275.80

ELEV 11 228.50 249.10 286.40 296.40 297.80 278.50

ELEV 11 265.10 254.70 239.50 187.30 136.70 125.80

ELEV 11 110.50 134.80 156.90 145.10 153.80 155.60

ELEV 11 178.50 187.60 208.40 223.50 226.90 205.80

ELEV 11 212.70 159.70 172.90 174.80 135.70 126.60

ELEV 11 178.20 220.30 196.50 151.20 135.00 134.00

ELEV 11 157.30 122.70 117.30 124.30 137.40 134.90

ELEV 11 121.00 118.30 125.60 124.70 139.90 146.00

ELEV 11 139.70 157.40 150.60 152.30 178.50 196.90

ELEV 11 193.90 172.90 197.10 194.70 207.50 218.90

ELEV 11 235.30 246.10 260.50 272.90 267.70 250.90

ELEV 11 252.00 254.30 265.60 274.50 284.90 282.00

ELEV 11 254.10 237.40 262.30

ELEV 12 256.20 278.90 288.90 297.10 292.30 287.80

ELEV 12 273.20 231.40 212.40 178.70 175.10 190.90

ELEV 12 121.00 119.10 145.30 161.80 172.80 168.20

ELEV 12 171.50 196.00 210.00 226.20 238.30 249.10

ELEV 12 232.30 206.60 181.40 141.30 125.10 158.60

ELEV 12 194.10 229.60 210.80 179.50 160.90 138.00

ELEV 12 161.40 159.80 142.30 142.20 159.90 182.30

ELEV 12 184.90 152.10 140.70 161.40 192.90 218.10

ELEV 12 187.60 148.00 153.90 147.70 161.20 182.90

ELEV 12 172.10 172.70 186.50 197.00 205.60 208.90

ELEV 12 223.20 242.30 256.10 278.20 273.00 261.60

ELEV 12 270.30 272.90 276.20 295.10 296.70 294.40

ELEV 12 264.90 235.70 255.80

ELEV 13 259.90 273.80 289.00 288.70 302.50 299.70

ELEV 13 286.80 245.50 214.70 232.60 235.00 219.50

ELEV 13 170.20 123.80 114.40 151.10 158.20 162.80

ELEV 13 193.70 207.90 212.60 220.50 245.30 233.70

ELEV 13 226.20 210.90 180.30 157.40 134.80 182.30

ELEV 13 213.70 237.80 235.80 209.90 161.10 144.60

ELEV 13 167.60 155.10 153.60 163.90 159.10 198.50

ELEV 13 238.50 212.40 175.80 196.30 224.20 248.80

ELEV 13 216.00 163.00 189.20 159.20 153.20 174.30

ELEV 13 158.20 175.20 211.90 224.60 239.30 244.40

ELEV 13 242.20 259.60 271.80 274.00 269.20 274.60

ELEV 13 284.50 272.60 273.90 287.60 288.40 290.90

ELEV 13 288.20 257.90 244.30

ELEV 14 244.10 261.50 285.90 298.00 306.80 308.70

ELEV 14 280.10 266.90 235.50 235.30 244.70 220.10

ELEV 14 180.60 158.60 129.10 125.70 143.70 181.10

ELEV 14 204.50 229.70 217.10 233.20 240.30 210.20

ELEV 14 196.00 186.80 186.90 174.30 135.10 169.80

ELEV 14 176.50 200.90 223.20 199.60 163.00 171.90

ELEV 14 186.50 161.60 165.80 203.80 203.60 228.40

ELEV 14 272.20 271.90 245.60 229.50 234.50 259.10

ELEV 14 226.40 190.60 206.30 164.70 150.60 156.10

ELEV 14 153.30 186.30 202.10 228.40 249.30 258.40

ELEV 14 258.70 270.10 273.00 268.70 275.70 275.00

ELEV 14 270.60 270.70 268.40 271.70 284.70 281.70

ELEV 14 284.60 275.50 243.70

ELEV 15 251.90 276.90 291.00 295.90 301.40 296.50

ELEV 15 284.00 279.30 258.10 245.60 240.50 196.60

ELEV 15 186.10 173.50 160.30 131.00 149.80 178.20

ELEV 15 188.30 205.60 191.80 214.70 224.40 217.30

ELEV 15 207.10 192.70 171.80 152.60 144.50 145.70

ELEV 15 152.40 173.30 205.50 225.00 223.60 223.30

ELEV 15 200.00 186.30 178.90 216.50 265.40 282.80

ELEV 15 285.30 282.80 265.00 263.00 270.10 278.70

ELEV 15 253.20 232.20 218.10 186.60 166.50 151.00

ELEV 15 150.40 173.30 200.40 228.50 243.70 260.60

ELEV 15 233.30 245.70 251.90 273.60 259.20 271.50

ELEV 15 257.80 260.80 272.10 266.10 278.10 293.10

ELEV 15 295.00 285.60 265.20

ELEV 16 277.20 285.40 286.30 289.50 305.00 298.30

ELEV 16 286.70 277.80 259.50 248.60 235.80 215.90

ELEV 16 229.30 195.20 160.40 136.20 133.30 142.00

ELEV 16 160.10 180.00 180.20 193.80 202.10 235.60

ELEV 16 233.10 203.10 194.30 177.50 199.50 183.20

ELEV 16 197.80 164.70 204.10 225.50 257.10 250.60

ELEV 16 232.30 230.00 216.70 230.60 293.50 301.00

ELEV 16 298.00 290.60 283.00 285.00 286.70 286.50

ELEV 16 278.30 249.20 227.50 199.20 180.00 160.80

ELEV 16 158.40 179.30 207.90 207.10 220.60 227.90

ELEV 16 212.70 218.80 254.60 274.30 254.30 243.80

ELEV 16 248.50 257.10 273.10 274.60 277.20 296.70

ELEV 16 297.50 293.90 288.10

ELEV 17 268.10 260.30 274.10 284.90 299.80 295.10

ELEV 17 276.30 270.30 267.70 261.80 250.80 236.60

ELEV 17 211.80 177.70 156.80 141.90 169.20 188.00

ELEV 17 158.40 157.40 169.90 212.40 226.60 247.40

ELEV 17 227.20 206.00 223.50 199.80 220.90 199.30

ELEV 17 208.30 171.80 201.10 216.10 231.20 256.20

ELEV 17 270.50 279.00 259.50 249.20 296.10 306.40

ELEV 17 299.50 293.90 291.70 289.80 290.00 285.20

ELEV 17 275.80 245.70 221.40 188.40 191.80 166.50

ELEV 17 150.20 188.40 192.40 181.50 209.80 201.30

ELEV 17 198.30 236.70 271.10 270.50 232.70 241.00

ELEV 17 252.80 262.30 275.90 273.30 280.30 292.90

ELEV 17 299.50 298.50 299.20

ELEV 18 255.60 254.40 269.10 272.80 283.80 275.70

ELEV 18 285.80 279.40 273.50 257.40 240.10 226.40

ELEV 18 207.90 205.10 198.70 168.80 167.10 195.50

ELEV 18 204.90 180.20 188.10 214.60 233.40 258.30

ELEV 18 265.20 256.60 239.70 225.30 247.60 232.30

ELEV 18 222.80 188.80 197.70 196.50 211.80 223.90

ELEV 18 253.00 283.20 282.10 287.00 293.70 299.90

ELEV 18 304.00 292.30 290.90 284.70 283.10 267.80

ELEV 18 255.50 237.60 222.80 198.00 162.60 157.80

ELEV 18 151.20 168.70 180.10 175.60 188.70 183.20

ELEV 18 218.60 260.50 260.30 250.90 235.90 262.60

ELEV 18 271.30 273.30 285.60 292.90 284.30 294.60

ELEV 18 304.20 307.30 305.10

ELEV 19 237.60 245.40 261.10 276.80 284.80 275.40

ELEV 19 281.80 269.10 262.00 244.40 234.40 224.00

ELEV 19 231.20 209.30 194.80 180.50 176.20 190.20

ELEV 19 216.00 200.00 189.10 211.50 224.10 247.90

ELEV 19 270.50 275.70 256.80 237.60 254.00 238.10

ELEV 19 215.30 188.80 209.80 218.70 261.10 250.60

ELEV 19 251.70 264.50 281.20 285.80 288.40 298.50

ELEV 19 304.60 301.60 286.80 274.50 268.60 257.00

ELEV 19 233.30 215.70 209.20 189.70 197.80 181.50

ELEV 19 150.30 151.50 156.50 166.10 178.80 228.00

ELEV 19 244.70 244.30 235.30 227.90 249.40 266.60

ELEV 19 276.30 273.90 292.20 294.70 288.60 288.80

ELEV 19 307.10 305.90 307.50

ELEV 20 245.60 273.60 275.00 288.50 297.10 289.80

ELEV 20 288.40 274.90 260.60 247.40 244.20 243.50

ELEV 20 240.30 204.50 179.90 165.00 178.50 205.00

ELEV 20 231.30 204.30 193.20 219.60 230.00 239.10

ELEV 20 262.50 279.20 277.40 267.00 257.50 227.10

ELEV 20 210.20 192.30 209.40 232.70 272.60 272.00

ELEV 20 272.00 279.00 274.80 285.00 288.10 296.60

ELEV 20 299.50 303.10 302.00 285.90 283.20 263.10

ELEV 20 230.50 222.70 209.10 221.80 223.20 213.00

ELEV 20 176.20 161.80 157.40 159.30 187.90 217.90

ELEV 20 223.80 219.30 215.70 250.20 269.20 274.20

ELEV 20 286.60 282.30 303.40 298.10 292.80 289.00

ELEV 20 302.10 300.80 312.90

ELEV 21 276.30 280.90 278.10 284.20 289.70 283.80

ELEV 21 248.70 250.00 254.30 227.80 249.40 262.10

ELEV 21 234.20 218.50 198.60 186.10 214.20 224.70

ELEV 21 234.70 205.60 204.60 234.20 268.70 255.10

ELEV 21 262.70 286.80 282.90 278.80 231.90 210.60

ELEV 21 238.30 202.90 209.60 231.40 268.90 285.00

ELEV 21 287.10 289.50 284.00 282.00 289.60 292.50

ELEV 21 305.20 305.00 307.00 292.00 285.20 255.10

ELEV 21 251.00 259.40 228.50 223.00 238.00 201.80

ELEV 21 196.00 208.10 172.60 156.60 184.10 188.20

ELEV 21 195.60 216.10 234.60 256.60 279.00 289.60

ELEV 21 293.00 293.60 302.60 292.90 290.40 303.10

ELEV 21 307.10 306.70 314.10

ELEV 22 281.20 284.60 285.30 291.00 285.50 261.00

ELEV 22 225.60 225.30 233.90 200.10 232.10 239.60

ELEV 22 244.70 225.80 202.00 194.70 226.40 229.00

ELEV 22 219.80 195.30 210.80 225.90 260.80 265.90

ELEV 22 274.20 278.00 276.50 258.10 243.70 238.50

ELEV 22 249.10 222.00 210.30 227.30 257.90 282.10

ELEV 22 285.70 282.30 279.80 281.40 288.70 289.50

ELEV 22 308.40 305.70 305.00 299.40 276.00 248.10

ELEV 22 260.70 258.90 243.30 240.90 253.70 230.10

ELEV 22 238.20 236.00 199.40 173.50 174.70 173.90

ELEV 22 205.80 228.50 229.80 243.40 260.60 284.40

ELEV 22 295.50 293.00 306.20 298.60 294.00 307.60

ELEV 22 318.80 325.80 323.40

ELEV 23 264.00 263.50 265.80 286.40 275.00 252.20

ELEV 23 224.50 204.60 201.30 191.20 216.50 201.30

ELEV 23 223.70 240.20 220.40 221.30 229.10 234.40

ELEV 23 227.70 202.00 233.00 233.70 236.60 261.30

ELEV 23 275.00 285.80 266.10 253.70 236.40 261.70

ELEV 23 272.90 241.00 207.60 217.70 253.60 282.00

ELEV 23 280.10 273.30 277.10 283.60 286.00 288.60

ELEV 23 299.00 299.70 305.40 301.80 286.10 272.40

ELEV 23 280.60 281.80 280.50 264.30 261.10 262.30

ELEV 23 256.20 218.50 196.50 175.90 205.40 178.90

ELEV 23 192.80 202.70 219.90 248.50 269.20 289.40

ELEV 23 291.40 297.50 297.40 302.00 306.70 312.70

ELEV 23 319.40 322.60 319.80

ELEV 24 237.90 241.90 245.90 264.40 247.50 235.80

ELEV 24 222.80 206.10 181.50 175.40 190.40 197.30

ELEV 24 229.40 224.80 227.80 234.30 247.30 256.30

ELEV 24 245.60 211.30 231.50 251.40 256.70 257.30

ELEV 24 277.30 279.00 262.20 239.00 259.80 259.80

ELEV 24 264.20 229.80 207.00 200.40 219.40 265.70

ELEV 24 262.10 254.90 265.10 286.00 289.00 295.50

ELEV 24 296.40 301.70 305.40 302.00 292.60 285.20

ELEV 24 285.60 281.90 282.10 257.10 243.80 243.20

ELEV 24 241.40 201.10 178.00 197.50 199.30 181.50

ELEV 24 189.60 217.20 233.90 248.20 262.20 274.30

ELEV 24 280.70 264.70 268.90 292.60 297.90 293.30

ELEV 24 305.00 307.70 304.30

ELEV 25 252.30 254.20 250.00 266.40 239.40 217.70

ELEV 25 209.20 211.30 195.90 163.80 175.20 210.30

ELEV 25 211.30 206.20 216.00 227.50 251.80 266.20

ELEV 25 251.20 236.50 237.20 248.30 267.60 276.60

ELEV 25 278.60 272.90 247.50 246.30 262.40 265.90

ELEV 25 236.90 216.40 232.60 212.90 216.30 215.90

ELEV 25 239.30 246.30 264.90 282.20 290.00 294.90

ELEV 25 297.60 307.10 304.20 299.40 292.00 294.20

ELEV 25 283.70 270.00 269.50 253.40 234.30 216.20

ELEV 25 215.60 202.50 190.50 217.10 199.80 177.70

ELEV 25 200.70 215.80 208.10 227.00 236.00 241.80

ELEV 25 248.70 241.00 249.80 283.30 277.90 280.40

ELEV 25 284.80 284.90 286.50

ELEV 26 276.20 267.10 272.10 249.80 224.00 201.50

ELEV 26 172.00 188.10 212.30 185.60 165.40 179.70

ELEV 26 187.10 206.00 223.30 241.80 260.70 261.50

ELEV 26 263.80 263.10 248.70 258.10 268.40 273.50

ELEV 26 285.50 279.20 253.70 266.50 271.60 256.60

ELEV 26 236.70 243.60 255.80 226.50 244.50 243.00

ELEV 26 231.30 247.40 270.30 284.00 290.70 292.70

ELEV 26 302.30 304.90 303.00 291.80 290.00 285.70

ELEV 26 281.80 259.00 244.60 250.40 237.60 220.40

ELEV 26 189.90 184.20 201.20 209.70 177.20 161.60

ELEV 26 161.10 170.70 168.70 204.90 214.60 213.00

ELEV 26 232.30 227.90 229.70 246.20 247.90 256.40

ELEV 26 277.20 280.20 292.10

ELEV 27 294.40 285.30 278.50 265.00 231.60 191.00

ELEV 27 178.80 172.70 193.20 177.70 178.80 204.80

ELEV 27 203.50 219.70 234.20 234.80 259.90 251.40

ELEV 27 265.10 268.20 269.90 275.20 290.30 283.60

ELEV 27 286.30 278.40 276.70 281.40 282.90 272.00

ELEV 27 249.40 268.50 278.60 264.50 270.70 273.00

ELEV 27 249.60 271.60 280.40 284.40 285.00 295.60

ELEV 27 301.20 305.90 301.40 282.10 269.70 284.40

ELEV 27 279.80 255.30 229.10 209.70 202.20 196.70

ELEV 27 197.40 215.30 224.80 213.70 187.40 182.80

ELEV 27 203.00 181.90 182.00 208.00 242.10 251.00

ELEV 27 260.60 248.20 242.00 244.80 247.00 254.10

ELEV 27 281.30 304.60 297.20

ELEV 28 277.90 286.40 264.50 255.60 236.40 213.40

ELEV 28 219.00 197.90 167.60 162.00 184.10 200.20

ELEV 28 207.90 202.20 213.30 220.50 231.10 230.30

ELEV 28 238.50 246.70 268.00 283.20 289.20 286.20

ELEV 28 286.00 279.20 284.10 277.60 286.90 276.40

ELEV 28 262.80 269.40 279.50 272.90 268.10 274.10

ELEV 28 259.70 266.00 278.40 282.00 290.10 298.00

ELEV 28 302.30 300.40 296.40 282.40 255.90 275.80

ELEV 28 283.40 256.60 259.80 234.90 231.10 230.40

ELEV 28 233.40 241.30 244.60 223.60 195.60 218.10

ELEV 28 222.20 181.40 182.00 215.80 239.20 262.40

ELEV 28 289.10 293.40 289.60 296.50 280.20 270.00

ELEV 28 263.50 276.90 291.00

ELEV 29 277.60 280.00 266.50 263.70 239.30 208.20

ELEV 29 203.70 207.90 168.30 151.70 162.30 170.10

ELEV 29 190.30 183.40 196.60 200.30 203.60 225.30

ELEV 29 235.90 254.10 277.90 284.10 286.00 289.00

ELEV 29 291.20 287.30 289.10 289.90 287.70 275.50

ELEV 29 272.30 266.90 270.10 275.40 261.00 263.80

ELEV 29 250.20 255.20 273.40 281.20 287.50 296.00

ELEV 29 298.00 300.70 293.40 282.00 260.00 263.50

ELEV 29 277.40 273.50 267.90 264.10 259.00 253.60

ELEV 29 248.50 248.60 245.50 226.80 218.30 233.50

ELEV 29 209.10 172.00 190.70 213.60 239.50 245.40

ELEV 29 279.70 309.40 300.10 308.10 288.90 289.60

ELEV 29 283.80 283.10 294.90

ELEV 30 222.10 244.20 244.00 264.10 236.10 200.10

ELEV 30 167.80 157.30 165.40 152.50 190.90 213.10

ELEV 30 212.80 207.20 231.20 253.20 248.40 256.70

ELEV 30 282.20 285.10 289.10 289.90 288.90 290.50

ELEV 30 289.60 288.70 291.00 293.30 291.50 289.70

ELEV 30 291.10 284.70 284.70 277.90 273.20 259.70

ELEV 30 250.80 250.20 271.00 283.30 286.90 293.40

ELEV 30 300.10 297.90 288.80 288.30 266.30 243.90

ELEV 30 253.90 275.50 280.50 278.50 272.20 263.80

ELEV 30 242.10 223.00 227.50 216.80 212.80 216.90

ELEV 30 202.70 177.30 183.50 201.20 229.80 255.60

ELEV 30 287.30 300.30 297.60 291.60 286.30 300.00

ELEV 30 294.10 295.00 300.50

ELEV 31 163.90 218.90 256.70 261.90 227.80 208.90

ELEV 31 188.40 152.10 154.40 147.50 177.30 215.40

ELEV 31 240.90 234.40 246.60 274.60 272.50 273.80

ELEV 31 284.80 292.00 286.80 282.90 286.10 288.60

ELEV 31 285.10 284.20 286.10 291.40 291.80 290.10

ELEV 31 291.20 288.80 287.10 280.80 273.50 260.70

ELEV 31 254.00 256.40 262.40 278.30 290.90 297.20

ELEV 31 299.10 294.50 289.60 277.40 262.00 231.20

ELEV 31 252.50 257.00 270.40 273.10 267.20 255.60

ELEV 31 230.00 219.10 217.30 208.10 216.30 194.80

ELEV 31 179.70 177.50 199.20 208.60 230.30 261.70

ELEV 31 274.80 278.10 283.00 288.50 296.00 302.00

ELEV 31 300.80 296.60 297.00

ELEV 32 177.10 220.00 236.70 248.70 223.90 182.20

ELEV 32 183.80 162.40 145.70 168.20 206.30 231.30

ELEV 32 258.70 267.50 256.60 284.10 284.00 281.00

ELEV 32 288.70 281.90 278.50 272.50 279.60 275.30

ELEV 32 268.70 270.40 279.00 288.90 290.90 287.50

ELEV 32 285.50 283.80 285.20 287.90 282.50 269.50

ELEV 32 262.40 258.20 256.70 278.80 288.30 292.50

ELEV 32 288.00 292.00 287.60 277.40 253.10 231.90

ELEV 32 236.80 242.60 253.10 258.50 260.70 249.40

ELEV 32 225.90 214.60 202.30 202.60 191.90 197.20

ELEV 32 185.60 179.80 186.90 215.70 220.50 248.00

ELEV 32 261.70 272.60 292.60 297.90 301.40 303.60

ELEV 32 298.10 289.30 300.50

ELEV 33 150.80 173.30 182.50 211.00 205.40 173.70

ELEV 33 148.00 139.40 143.80 176.20 219.20 230.10

ELEV 33 255.60 276.80 286.90 278.70 271.90 268.00

ELEV 33 280.40 280.80 266.90 258.20 265.40 268.50

ELEV 33 271.40 276.20 283.50 286.80 286.60 269.30

ELEV 33 274.70 283.00 284.50 282.90 280.80 272.40

ELEV 33 265.10 264.40 260.00 274.90 285.90 286.90

ELEV 33 283.70 281.20 286.40 283.70 268.70 250.80

ELEV 33 228.90 232.60 236.80 242.20 228.60 218.30

ELEV 33 216.30 199.50 220.10 214.90 198.30 207.10

ELEV 33 198.70 183.60 191.10 228.70 242.80 258.90

ELEV 33 285.80 278.80 306.00 310.10 307.50 300.10

ELEV 33 290.90 279.80 290.40

ELEV 34 126.60 128.30 130.80 157.80 170.30 171.30

ELEV 34 144.00 126.90 144.10 186.50 199.80 204.50

ELEV 34 247.40 269.50 262.60 251.10 259.40 254.40

ELEV 34 257.40 274.00 258.60 264.40 276.90 280.60

ELEV 34 278.00 281.10 283.90 289.30 284.20 277.10

ELEV 34 255.80 281.00 282.30 276.50 278.90 279.50

ELEV 34 266.40 260.30 261.00 269.00 275.50 278.10

ELEV 34 280.30 282.00 282.50 276.40 280.50 267.70

ELEV 34 238.60 220.40 218.00 223.90 214.40 208.90

ELEV 34 208.30 210.70 232.70 235.70 201.30 195.90

ELEV 34 192.70 177.90 193.30 217.10 242.60 281.30

ELEV 34 288.90 287.30 306.50 314.30 307.20 291.20

ELEV 34 288.40 277.60 272.30

ELEV 35 136.50 123.80 126.40 129.70 154.50 149.80

ELEV 35 135.50 122.80 154.20 158.70 167.70 201.00

ELEV 35 226.90 233.60 226.70 241.00 252.20 235.80

ELEV 35 243.40 272.30 256.60 272.60 283.20 282.50

ELEV 35 278.50 272.50 277.70 284.80 282.40 268.80

ELEV 35 260.60 277.50 274.90 255.00 266.70 265.80

ELEV 35 267.10 267.70 270.50 270.10 268.50 274.80

ELEV 35 276.80 277.10 275.70 272.10 270.20 256.10

ELEV 35 228.70 221.60 216.60 217.30 225.50 221.20

ELEV 35 236.80 243.60 249.40 223.20 202.00 188.60

ELEV 35 177.70 186.00 207.40 236.80 265.80 290.40

ELEV 35 290.80 294.70 300.40 307.60 304.30 272.90

ELEV 35 261.80 267.30 261.30

ELEV 36 184.90 182.30 125.10 122.30 138.00 132.00

ELEV 36 119.50 122.00 132.30 146.80 142.20 159.00

ELEV 36 176.20 179.90 210.80 225.70 229.70 224.70

ELEV 36 243.10 268.90 256.40 263.70 273.50 269.90

ELEV 36 261.90 264.80 278.60 279.80 275.90 267.40

ELEV 36 245.20 261.70 248.10 248.90 266.90 264.00

ELEV 36 264.00 270.20 266.00 266.00 270.00 267.90

ELEV 36 259.80 264.00 267.60 273.70 248.70 236.20

ELEV 36 225.10 234.00 237.90 238.50 248.40 241.80

ELEV 36 260.00 249.20 241.40 228.80 208.00 189.60

ELEV 36 190.60 199.40 225.70 246.50 276.10 295.90

ELEV 36 294.00 299.00 293.90 301.00 295.30 280.10

ELEV 36 257.50 256.50 247.30

ELEV 37 254.30 228.50 171.30 125.90 112.00 115.60

ELEV 37 118.30 156.00 164.80 199.00 180.70 152.50

ELEV 37 191.90 200.20 193.20 199.60 201.50 209.80

ELEV 37 229.60 249.50 243.80 245.50 253.70 255.50

ELEV 37 267.10 272.10 271.90 266.60 271.80 250.90

ELEV 37 247.40 246.90 244.00 251.30 271.10 264.00

ELEV 37 264.00 269.50 266.00 266.00 269.10 250.10

ELEV 37 249.30 251.70 258.60 250.70 237.10 230.20

ELEV 37 236.10 248.60 248.00 258.30 263.10 268.90

ELEV 37 270.10 257.60 241.30 219.20 190.70 186.00

ELEV 37 184.90 202.50 230.10 246.50 262.40 283.70

ELEV 37 295.50 297.40 286.60 288.90 290.30 286.80

ELEV 37 270.60 245.80 239.00

ELEV 38 229.10 208.40 202.40 136.20 111.00 112.40

ELEV 38 130.20 164.80 177.00 205.30 225.40 171.40

ELEV 38 161.40 184.50 220.50 225.30 217.90 212.50

ELEV 38 217.20 220.10 229.60 239.30 246.20 258.20

ELEV 38 263.20 260.90 266.90 261.20 242.10 236.90

ELEV 38 242.40 240.30 245.50 248.90 266.90 264.00

ELEV 38 264.00 271.70 268.60 266.00 269.50 262.90

ELEV 38 265.70 251.40 251.70 243.10 238.80 249.00

ELEV 38 252.30 261.90 277.80 262.30 257.10 260.60

ELEV 38 247.80 234.40 210.20 186.70 190.30 188.50

ELEV 38 188.90 205.40 246.80 266.20 268.90 291.50

ELEV 38 296.10 293.80 285.70 278.80 284.00 281.00

ELEV 38 264.80 240.50 269.40

ELEV 39 191.70 174.00 168.60 152.80 113.70 123.20

ELEV 39 136.30 163.00 203.90 224.80 240.80 221.50

ELEV 39 172.20 168.80 206.80 236.00 252.30 243.80

ELEV 39 231.10 233.90 248.10 251.20 252.90 259.10

ELEV 39 256.70 247.30 258.20 248.40 239.10 263.10

ELEV 39 260.10 244.20 243.90 247.00 260.90 264.00

ELEV 39 264.00 273.70 271.20 270.50 273.90 265.40

ELEV 39 266.40 250.30 249.60 254.10 263.30 275.90

ELEV 39 275.10 271.40 265.30 247.90 245.00 239.40

ELEV 39 226.50 207.70 198.70 195.30 189.90 183.10

ELEV 39 187.50 223.30 270.20 286.70 280.40 293.60

ELEV 39 287.90 278.30 268.50 274.30 284.90 279.70

ELEV 39 247.70 254.60 285.70

ELEV 40 212.60 209.30 173.40 130.20 115.00 135.10

ELEV 40 172.40 185.10 189.70 228.80 248.20 209.30

ELEV 40 192.50 205.00 212.70 237.10 269.20 261.60

ELEV 40 250.50 244.90 251.70 260.80 260.20 255.50

ELEV 40 255.10 255.40 232.90 233.00 253.20 264.20

ELEV 40 270.30 262.80 247.00 249.20 255.80 264.90

ELEV 40 264.20 269.20 269.10 276.30 275.10 255.60

ELEV 40 246.00 254.70 263.20 270.40 273.90 271.10

ELEV 40 274.90 271.20 254.50 241.10 229.50 229.60

ELEV 40 228.90 207.60 193.20 195.40 203.00 203.60

ELEV 40 215.00 255.60 279.10 287.10 287.90 295.40

ELEV 40 260.70 250.20 248.70 259.30 266.10 264.70

ELEV 40 237.30 264.70 287.00

ELEV 41 237.50 202.70 181.50 133.70 125.70 152.00

ELEV 41 192.00 222.30 215.60 253.60 232.20 220.70

ELEV 41 186.40 205.40 232.40 251.10 249.40 250.20

ELEV 41 237.30 233.10 248.30 261.80 258.20 246.20

ELEV 41 239.90 244.50 232.00 248.10 261.30 260.20

ELEV 41 264.90 266.00 253.20 250.20 262.70 263.10

ELEV 41 265.70 276.50 277.70 284.90 267.90 250.80

ELEV 41 244.10 264.70 273.30 280.40 279.10 267.60

ELEV 41 265.90 262.10 269.00 247.90 228.80 215.10

ELEV 41 217.50 218.20 201.10 193.30 213.20 201.20

ELEV 41 234.30 273.80 294.60 296.60 292.00 277.50

ELEV 41 249.00 237.20 236.80 259.10 254.70 250.50

ELEV 41 230.80 266.60 284.80

ELEV 42 227.20 190.20 156.40 132.60 137.10 164.20

ELEV 42 218.50 248.80 255.90 250.10 263.60 259.70

ELEV 42 222.10 186.70 217.40 226.20 228.90 232.80

ELEV 42 215.80 229.10 246.80 238.20 249.40 235.30

ELEV 42 232.00 232.00 232.00 252.30 253.90 261.40

ELEV 42 268.50 264.90 256.60 255.10 262.70 264.70

ELEV 42 273.40 274.60 299.70 296.80 278.30 248.10

ELEV 42 251.00 272.90 275.90 268.30 275.70 272.40

ELEV 42 259.20 246.10 253.90 258.00 238.90 212.90

ELEV 42 203.90 212.40 207.40 200.30 199.30 201.90

ELEV 42 221.00 245.00 301.10 300.70 288.50 268.30

ELEV 42 246.40 225.90 235.50 261.10 247.00 225.50

ELEV 42 247.60 248.50 261.90

ELEV 43 204.60 176.50 159.60 134.60 144.50 185.00

ELEV 43 219.00 255.30 263.50 272.40 269.90 257.70

ELEV 43 222.90 180.80 203.70 204.60 210.70 208.00

ELEV 43 206.70 212.40 212.40 218.10 222.20 232.00

ELEV 43 232.00 232.00 232.00 233.50 245.70 259.70

ELEV 43 262.80 257.20 263.30 263.60 273.00 279.50

ELEV 43 289.00 309.00 314.20 306.90 278.10 242.50

ELEV 43 279.00 290.60 285.30 266.50 258.40 261.00

ELEV 43 262.20 241.60 251.50 261.00 242.70 215.50

ELEV 43 209.20 201.80 192.60 198.20 220.10 201.00

ELEV 43 202.00 230.00 259.90 289.20 285.10 269.70

ELEV 43 235.40 223.30 238.60 246.00 225.60 240.30

ELEV 43 274.40 282.40 274.40

ELEV 44 172.60 174.30 190.30 136.00 153.10 195.90

ELEV 44 223.70 219.10 228.20 274.00 276.30 261.00

ELEV 44 238.20 192.40 186.00 191.40 192.50 213.60

ELEV 44 235.10 256.20 233.80 258.50 261.90 268.60

ELEV 44 258.90 248.10 248.20 241.70 239.70 245.10

ELEV 44 252.80 254.70 262.20 263.90 273.50 285.80

ELEV 44 307.50 333.20 319.00 304.00 273.30 270.20

ELEV 44 300.10 294.70 279.40 264.70 257.10 244.90

ELEV 44 243.90 239.00 242.90 252.00 238.40 219.30

ELEV 44 216.80 236.90 226.00 233.30 237.40 211.60

ELEV 44 204.20 208.50 223.00 256.50 271.60 255.90

ELEV 44 231.60 224.20 221.80 223.30 241.10 269.40

ELEV 44 283.50 291.80 289.20

ELEV 45 195.70 161.60 162.60 138.00 158.10 170.40

ELEV 45 177.00 193.00 233.00 274.30 271.10 255.50

ELEV 45 227.40 205.40 181.50 202.20 225.10 238.20

ELEV 45 273.50 276.70 251.70 277.50 280.30 282.90

ELEV 45 269.50 261.00 263.50 248.70 250.10 256.10

ELEV 45 253.80 253.10 259.60 272.10 275.20 300.40

ELEV 45 329.50 336.50 316.60 306.60 259.10 296.10

ELEV 45 312.30 301.60 288.70 263.00 254.50 248.30

ELEV 45 235.80 227.30 229.90 234.70 231.70 204.20

ELEV 45 226.20 247.40 240.10 252.00 247.40 211.20

ELEV 45 206.20 204.50 212.10 225.00 237.40 242.00

ELEV 45 215.50 214.10 220.20 238.60 257.60 265.00

ELEV 45 282.20 283.90 289.90

ELEV 46 218.40 186.70 165.10 150.30 160.30 161.70

ELEV 46 178.60 195.30 230.10 261.30 256.20 249.80

ELEV 46 233.10 207.40 200.50 230.00 251.40 267.40

ELEV 46 276.30 281.00 277.50 270.90 276.50 278.00

ELEV 46 277.50 268.30 271.10 262.10 262.30 256.10

ELEV 46 252.00 255.00 260.00 273.60 281.50 312.00

ELEV 46 333.40 333.60 327.20 309.90 261.00 309.60

ELEV 46 325.40 312.90 297.10 274.90 259.10 251.10

ELEV 46 248.30 237.20 220.70 215.40 208.00 217.30

ELEV 46 249.40 253.30 262.60 264.40 243.10 229.80

ELEV 46 210.50 218.10 202.40 201.10 218.50 214.60

ELEV 46 210.90 226.60 241.30 265.00 279.50 285.10

ELEV 46 286.60 281.90 283.90

ELEV 47 202.40 187.30 147.20 178.50 183.20 187.30

ELEV 47 191.40 205.70 228.60 246.10 240.30 233.50

ELEV 47 227.70 202.50 211.70 236.80 248.10 260.60

ELEV 47 270.50 281.10 290.20 286.90 280.70 281.80

ELEV 47 280.80 280.00 279.30 269.90 252.00 252.00

ELEV 47 252.00 258.30 264.10 275.50 291.70 316.00

ELEV 47 323.20 331.90 302.20 247.60 271.90 312.60

ELEV 47 325.90 315.60 292.90 278.20 271.40 267.20

ELEV 47 260.10 253.10 232.70 210.90 230.10 241.50

ELEV 47 263.40 265.90 277.70 270.40 263.60 268.00

ELEV 47 270.70 254.60 201.10 207.50 206.70 223.50

ELEV 47 237.60 250.20 265.70 274.50 276.20 279.40

ELEV 47 275.00 278.00 274.00

ELEV 48 216.20 165.40 158.70 197.00 224.70 229.30

ELEV 48 231.60 233.30 229.10 228.30 219.40 209.90

ELEV 48 192.70 195.60 205.40 219.10 239.30 261.30

ELEV 48 272.20 280.00 286.50 290.10 291.10 289.50

ELEV 48 286.50 284.80 276.20 263.60 252.80 252.00

ELEV 48 254.50 257.10 268.70 283.30 303.80 320.10

ELEV 48 327.60 329.90 274.20 284.50 305.80 315.70

ELEV 48 321.50 314.40 305.40 297.40 283.00 272.80

ELEV 48 254.90 241.30 220.40 231.60 239.50 264.20

ELEV 48 275.70 269.10 281.90 268.10 275.20 288.70

ELEV 48 285.60 264.10 206.00 202.60 210.20 240.10

ELEV 48 248.50 265.70 264.30 273.10 273.70 275.40

ELEV 48 269.10 273.20 277.50

ELEV 49 204.50 163.00 170.70 213.40 253.00 277.40

ELEV 49 263.20 256.30 243.00 215.70 203.10 196.90

ELEV 49 210.60 230.90 214.60 208.40 226.00 241.80

ELEV 49 264.60 276.90 277.00 283.90 284.10 282.90

ELEV 49 274.20 275.70 275.90 253.60 252.00 260.00

ELEV 49 259.80 259.10 278.80 294.90 315.30 269.10

ELEV 49 201.90 252.20 299.20 291.90 302.80 310.40

ELEV 49 309.20 303.60 300.40 293.00 278.70 245.70

ELEV 49 243.90 227.60 217.10 232.70 240.30 273.00

ELEV 49 282.30 276.30 281.10 279.10 286.30 287.10

ELEV 49 284.30 251.30 221.40 206.50 213.90 225.40

ELEV 49 231.30 243.90 259.60 268.60 262.40 253.30

ELEV 49 265.70 276.00 271.50

ELEV 50 193.40 173.00 189.10 213.70 255.20 273.00

ELEV 50 264.90 249.60 236.40 215.40 210.10 215.30

ELEV 50 232.10 251.00 249.90 223.90 214.90 248.50

ELEV 50 259.30 267.50 275.20 271.60 271.80 272.90

ELEV 50 276.50 271.20 265.30 250.60 253.00 260.90

ELEV 50 263.60 268.20 286.00 298.70 320.60 273.80

ELEV 50 185.30 278.40 304.60 304.20 304.30 306.10

ELEV 50 305.40 304.70 300.70 267.70 263.10 239.90

ELEV 50 227.10 223.90 227.20 259.20 266.50 286.70

ELEV 50 287.70 285.80 275.70 277.10 282.20 269.80

ELEV 50 254.50 239.80 222.80 209.50 232.00 243.50

ELEV 50 223.80 233.00 249.50 261.40 243.50 241.80

ELEV 50 244.10 255.20 258.30

ELEV 51 187.40 185.90 204.50 223.50 252.20 252.10

ELEV 51 242.70 228.10 220.00 211.90 213.10 217.60

ELEV 51 240.10 257.80 260.50 220.00 223.00 256.40

ELEV 51 268.10 267.80 272.90 261.60 262.80 264.70

ELEV 51 258.80 259.70 251.90 251.50 255.20 262.10

ELEV 51 272.10 287.80 286.60 309.30 326.40 327.40

ELEV 51 282.20 330.90 325.00 320.60 312.10 304.20

ELEV 51 299.00 285.10 281.40 261.70 254.30 243.00

ELEV 51 226.80 221.30 238.00 254.80 271.40 286.40

ELEV 51 292.30 289.40 276.50 261.00 274.80 263.10

ELEV 51 245.40 231.40 221.40 223.30 238.00 251.70

ELEV 51 245.40 238.90 232.80 235.00 240.90 240.00

ELEV 51 238.60 243.30 259.60

ELEV 52 202.80 188.80 210.20 214.10 241.40 271.20

ELEV 52 255.50 244.70 226.20 214.00 226.20 224.10

ELEV 52 253.80 259.60 257.30 231.10 213.30 255.50

ELEV 52 260.00 259.00 250.50 245.10 254.60 250.80

ELEV 52 253.10 252.60 261.10 260.90 265.70 258.60

ELEV 52 277.40 284.70 292.80 316.50 328.60 326.30

ELEV 52 324.90 336.80 332.20 320.20 308.40 323.00

ELEV 52 299.10 280.30 275.80 269.80 261.10 247.00

ELEV 52 234.50 248.40 263.70 273.40 278.90 293.60

ELEV 52 294.50 281.70 263.70 246.20 241.90 239.90

ELEV 52 228.90 229.40 213.50 221.20 247.70 268.70

ELEV 52 275.60 262.10 262.60 248.50 236.40 247.30

ELEV 52 248.60 252.30 263.30

ELEV 53 203.30 195.20 211.20 235.80 248.10 261.20

ELEV 53 256.10 253.90 224.30 221.70 245.80 243.40

ELEV 53 257.70 251.30 247.20 244.30 207.90 236.90

ELEV 53 224.30 245.60 256.40 276.30 282.10 270.90

ELEV 53 272.40 259.20 267.60 283.70 274.00 271.90

ELEV 53 269.10 278.00 302.40 324.40 321.80 314.70

ELEV 53 319.50 339.30 342.80 314.00 328.60 315.10

ELEV 53 295.80 279.20 262.80 265.90 259.10 246.60

ELEV 53 237.40 257.30 270.70 282.60 286.70 300.10

ELEV 53 291.50 275.40 256.00 239.30 235.30 235.00

ELEV 53 226.00 209.30 210.00 229.60 252.60 276.40

ELEV 53 283.30 276.60 275.90 255.70 249.50 259.90

ELEV 53 268.20 273.40 273.40

ELEV 54 209.80 211.00 233.70 255.10 260.80 268.90

ELEV 54 268.50 249.90 233.70 246.80 260.80 258.70

ELEV 54 260.70 253.40 266.10 250.50 213.40 226.80

ELEV 54 249.00 270.80 278.60 285.00 287.20 285.40

ELEV 54 285.00 280.90 269.00 275.60 285.00 276.00

ELEV 54 272.20 279.60 299.90 317.90 309.00 314.60

ELEV 54 325.80 342.10 338.90 309.40 310.70 307.30

ELEV 54 294.70 276.50 243.10 252.90 252.00 234.00

ELEV 54 246.60 255.90 272.10 283.40 295.70 302.60

ELEV 54 295.00 281.40 265.90 266.30 256.30 248.50

ELEV 54 236.70 214.70 209.90 230.90 250.10 273.10

ELEV 54 283.30 287.00 277.00 272.20 261.50 261.60

ELEV 54 272.40 280.60 293.70

ELEV 55 215.30 227.00 249.20 265.00 262.00 257.60

ELEV 55 258.00 261.60 243.60 249.30 255.90 267.90

ELEV 55 256.20 262.10 265.30 255.90 223.70 235.40

ELEV 55 267.40 279.30 286.10 285.30 285.60 281.00

ELEV 55 281.80 270.40 269.00 272.70 284.30 274.80

ELEV 55 281.70 287.10 302.00 299.80 311.50 321.10

ELEV 55 344.20 342.60 324.90 293.20 285.90 295.90

ELEV 55 284.50 258.00 242.50 247.40 242.20 241.50

ELEV 55 262.20 276.00 280.10 287.10 291.90 296.90

ELEV 55 290.30 284.30 275.60 262.90 253.20 254.10

ELEV 55 233.00 215.90 212.30 231.20 248.70 279.10

ELEV 55 282.60 281.20 278.60 284.40 286.00 284.60

ELEV 55 279.70 285.90 303.20

ELEV 56 226.10 237.80 248.10 261.70 266.20 271.40

ELEV 56 276.70 279.90 270.60 252.90 254.90 266.30

ELEV 56 265.90 272.00 259.70 244.90 229.00 226.50

ELEV 56 257.20 279.70 286.00 290.00 287.70 271.30

ELEV 56 280.60 283.20 281.10 284.50 278.70 274.20

ELEV 56 292.70 292.50 297.80 300.10 321.70 322.40

ELEV 56 333.10 328.10 313.20 302.20 291.70 274.80

ELEV 56 266.00 261.90 264.00 266.40 264.00 247.20

ELEV 56 269.50 278.20 287.20 287.80 287.00 289.00

ELEV 56 291.40 289.60 280.70 270.90 246.90 235.60

ELEV 56 224.20 217.60 227.00 263.90 271.50 275.40

ELEV 56 274.10 271.40 270.50 277.40 280.20 287.20

ELEV 56 286.80 291.90 309.20

ELEV 57 218.20 232.80 249.70 268.00 273.10 278.60

ELEV 57 284.10 281.00 276.60 268.30 253.50 268.10

ELEV 57 269.80 269.60 267.60 242.60 246.10 225.90

ELEV 57 227.40 259.30 271.20 278.60 266.00 279.30

ELEV 57 289.00 288.20 286.60 284.60 278.30 277.60

ELEV 57 287.80 282.10 301.10 298.40 308.20 318.80

ELEV 57 312.50 312.00 309.50 303.00 285.90 282.20

ELEV 57 286.80 281.90 285.60 279.50 263.90 247.10

ELEV 57 276.00 283.10 288.90 285.00 281.10 281.30

ELEV 57 284.10 288.80 283.90 271.90 258.90 242.00

ELEV 57 220.30 213.30 247.00 265.80 273.00 253.10

ELEV 57 247.60 238.00 251.90 262.30 286.60 286.50

ELEV 57 288.90 293.60 301.00

ELEV 58 233.40 244.50 257.10 268.40 278.80 285.40

ELEV 58 285.00 279.30 277.60 271.90 266.90 263.80

ELEV 58 262.60 256.90 255.30 246.30 254.90 234.10

ELEV 58 253.40 245.20 242.90 250.30 268.30 290.40

ELEV 58 293.30 293.00 288.60 280.40 285.30 274.10

ELEV 58 285.30 285.30 286.90 297.80 300.70 305.10

ELEV 58 305.80 305.50 296.30 300.20 289.60 294.00

ELEV 58 289.80 282.20 283.20 260.50 244.30 244.90

ELEV 58 277.50 288.10 287.40 280.00 277.30 274.40

ELEV 58 268.70 277.10 273.40 263.80 254.40 235.40

ELEV 58 212.90 215.70 239.20 247.90 250.10 240.90

ELEV 58 234.40 245.10 256.60 277.50 286.60 286.10

ELEV 58 287.90 295.50 308.70

ELEV 59 232.20 238.80 245.70 255.00 270.80 274.10

ELEV 59 274.30 277.50 273.60 274.10 264.70 261.20

ELEV 59 256.40 263.00 261.10 265.90 265.70 239.90

ELEV 59 276.30 278.80 258.90 256.90 277.40 287.30

ELEV 59 290.90 287.40 288.70 277.10 280.10 273.50

ELEV 59 272.80 282.10 295.90 299.00 303.60 302.20

ELEV 59 309.60 306.50 302.30 294.70 292.20 290.30

ELEV 59 285.00 279.40 260.60 250.60 252.30 256.10

ELEV 59 280.60 286.70 282.60 283.60 282.70 279.50

ELEV 59 265.20 250.40 240.90 235.80 238.60 221.30

ELEV 59 217.50 214.00 219.80 227.00 225.90 236.80

ELEV 59 232.00 251.40 260.20 283.10 280.80 289.10

ELEV 59 284.90 295.70 302.00

ELEV 60 215.90 223.60 233.90 240.80 254.70 258.90

ELEV 60 270.00 273.80 275.00 265.70 260.90 265.60

ELEV 60 270.30 279.80 281.50 276.80 260.70 252.20

ELEV 60 279.10 286.90 277.50 264.60 255.50 259.70

ELEV 60 265.40 281.20 269.60 267.80 276.20 272.30

ELEV 60 274.60 281.50 293.40 293.20 290.30 287.10

ELEV 60 293.40 294.10 297.60 295.10 289.90 281.10

ELEV 60 270.80 263.70 252.60 276.00 285.40 272.00

ELEV 60 271.60 287.80 286.50 276.90 282.50 285.50

ELEV 60 279.80 268.30 232.60 226.90 222.70 223.20

ELEV 60 227.20 223.70 212.60 220.80 235.60 250.60

ELEV 60 257.90 257.70 272.20 289.40 295.90 299.50

ELEV 60 302.30 305.20 311.10

ELEV 61 205.80 214.70 224.90 230.60 248.40 256.00

ELEV 61 276.40 271.80 266.50 255.50 257.70 271.90

ELEV 61 281.70 284.60 278.60 269.70 252.20 259.20

ELEV 61 275.60 281.00 281.50 280.70 285.40 284.10

ELEV 61 279.70 267.80 279.10 291.90 295.80 294.00

ELEV 61 279.20 280.70 281.40 289.40 290.20 304.30

ELEV 61 294.90 298.70 298.50 295.60 280.40 279.10

ELEV 61 264.10 266.70 274.80 289.00 291.60 291.10

ELEV 61 291.50 289.30 285.20 280.90 272.50 281.80

ELEV 61 279.80 267.10 233.70 228.10 225.50 247.90

ELEV 61 242.80 223.70 218.70 230.90 254.40 266.90

ELEV 61 283.50 287.10 289.40 295.70 296.80 303.90

ELEV 61 307.50 313.10 313.30

ELEV 62 210.30 219.30 226.40 236.80 258.30 272.10

ELEV 62 278.90 253.10 235.90 208.30 249.80 272.90

ELEV 62 284.10 278.00 273.40 259.90 241.50 263.00

ELEV 62 272.20 270.60 275.60 280.30 288.10 289.80

ELEV 62 289.50 289.50 295.90 305.10 302.20 293.70

ELEV 62 286.00 288.70 288.80 286.90 302.90 307.40

ELEV 62 300.40 302.90 300.70 294.70 285.50 278.70

ELEV 62 281.40 290.10 286.20 294.00 292.90 292.50

ELEV 62 293.90 284.20 283.30 284.70 267.40 276.00

ELEV 62 261.40 238.60 224.30 233.90 260.50 258.50

ELEV 62 241.80 219.50 223.80 237.70 248.70 259.20

ELEV 62 266.90 280.00 290.80 290.50 296.90 302.90

ELEV 62 309.30 307.80 302.80

ELEV 63 209.70 205.00 212.60 230.40 248.10 267.90

ELEV 63 253.00 227.80 216.50 208.80 234.10 264.70

ELEV 63 280.10 270.10 265.50 262.30 248.50 255.40

ELEV 63 257.70 264.70 271.90 278.10 282.00 281.10

ELEV 63 283.00 293.50 301.50 300.60 303.10 304.10

ELEV 63 294.40 291.30 291.50 293.90 307.30 309.00

ELEV 63 306.30 302.90 290.90 287.30 288.80 296.40

ELEV 63 298.70 300.20 298.60 295.20 295.80 293.00

ELEV 63 280.60 271.10 261.10 250.20 244.10 239.70

ELEV 63 232.70 235.60 242.50 263.00 279.00 265.60

ELEV 63 236.10 222.00 223.20 234.30 236.90 249.50

ELEV 63 253.90 276.90 290.10 294.20 296.90 300.60

ELEV 63 303.20 301.90 295.50

ELEV 64 201.00 198.20 198.10 205.30 235.30 251.60

ELEV 64 238.60 205.60 197.40 203.00 213.40 233.00

ELEV 64 264.10 272.40 268.90 261.10 250.80 246.60

ELEV 64 252.40 262.50 258.60 264.70 273.40 279.10

ELEV 64 273.70 288.60 298.30 309.90 313.90 310.10

ELEV 64 307.40 294.90 297.70 297.30 298.70 302.30

ELEV 64 302.80 291.20 282.80 285.10 290.00 300.00

ELEV 64 314.10 313.60 299.90 297.40 290.80 286.00

ELEV 64 264.40 256.20 252.50 245.70 243.10 242.00

ELEV 64 255.90 266.70 264.80 274.70 284.10 260.70

ELEV 64 243.30 223.00 236.00 248.00 248.60 254.40

ELEV 64 253.00 263.20 289.40 296.00 298.60 297.80

ELEV 64 303.10 301.20 291.60

ELEV 65 190.80 185.80 185.80 206.80 217.70 228.30

ELEV 65 229.70 197.30 195.20 208.80 221.30 243.30

ELEV 65 256.10 264.10 263.40 260.60 252.30 262.50

ELEV 65 258.10 260.60 266.60 259.60 280.90 287.70

ELEV 65 289.50 294.10 304.60 317.10 319.90 313.50

ELEV 65 313.70 297.50 295.80 292.00 290.00 293.10

ELEV 65 292.60 293.20 272.10 285.00 289.70 288.60

ELEV 65 299.00 312.30 304.70 287.10 285.60 262.60

ELEV 65 277.20 286.30 285.80 254.50 245.10 256.30

ELEV 65 258.90 279.30 284.20 283.80 284.40 264.90

ELEV 65 241.30 226.00 250.30 274.70 272.00 270.90

ELEV 65 280.90 278.90 292.30 293.50 292.70 296.30

ELEV 65 298.30 284.90 272.00

ELEV 66 188.40 182.00 188.90 188.40 197.10 209.40

ELEV 66 209.40 183.10 198.20 223.40 227.30 243.00

ELEV 66 266.20 262.50 253.30 251.10 259.20 270.60

ELEV 66 271.10 275.80 278.00 266.10 269.10 285.80

ELEV 66 287.90 296.90 304.40 310.80 324.20 317.60

ELEV 66 312.60 304.50 290.50 287.50 280.90 288.60

ELEV 66 290.60 280.50 267.00 273.20 278.30 271.90

ELEV 66 284.50 287.70 294.90 292.20 272.90 278.60

ELEV 66 295.10 293.40 288.10 251.40 256.00 279.50

ELEV 66 280.00 282.10 282.30 279.00 277.60 253.60

ELEV 66 232.60 220.50 252.50 268.90 270.00 266.30

ELEV 66 277.60 269.70 272.30 283.10 274.60 279.50

ELEV 66 292.20 270.50 269.20

ELEV 67 179.90 171.00 172.80 172.50 180.80 185.40

ELEV 67 187.20 183.30 184.40 198.90 220.40 239.90

ELEV 67 268.30 268.70 260.50 253.40 264.20 279.60

ELEV 67 280.50 281.60 282.90 276.50 268.00 280.10

ELEV 67 289.20 287.40 293.60 315.80 316.00 317.60

ELEV 67 308.60 296.60 288.10 283.30 273.30 285.90

ELEV 67 286.60 284.50 268.10 265.10 264.40 263.00

ELEV 67 270.70 286.40 288.10 291.30 290.20 295.50

ELEV 67 294.00 292.30 276.90 257.00 270.80 282.10

ELEV 67 280.20 283.00 280.00 263.20 253.40 232.00

ELEV 67 220.40 224.50 242.20 250.30 253.90 255.90

ELEV 67 266.70 262.10 263.50 258.40 274.70 292.90

ELEV 67 277.30 258.50 274.90

ELEV 68 165.50 164.50 164.00 163.00 167.80 166.70

ELEV 68 177.00 174.30 208.00 220.10 226.90 239.90

ELEV 68 254.50 259.80 275.70 260.40 270.70 284.00

ELEV 68 286.20 291.20 291.40 281.90 271.60 282.80

ELEV 68 292.30 294.20 306.50 316.10 314.90 316.40

ELEV 68 307.20 294.60 286.10 282.30 274.50 282.90

ELEV 68 289.20 287.30 280.10 260.00 248.70 255.30

ELEV 68 266.90 290.30 293.60 290.90 295.20 294.30

ELEV 68 288.50 267.00 254.80 250.90 277.90 277.50

ELEV 68 279.90 283.80 274.50 256.70 243.70 237.40

ELEV 68 224.30 228.80 228.80 231.00 245.20 248.00

ELEV 68 252.80 261.70 263.90 269.20 281.80 282.50

ELEV 68 259.30 256.00 271.30

ELEV 69 148.50 158.00 158.20 178.90 194.60 190.00

ELEV 69 194.10 206.90 226.60 233.80 224.90 235.60

ELEV 69 257.90 271.00 277.80 269.50 277.10 290.50

ELEV 69 291.20 305.40 300.00 290.70 281.30 292.10

ELEV 69 296.80 295.30 300.00 311.10 307.80 305.10

ELEV 69 301.80 292.80 297.30 277.10 266.80 281.60

ELEV 69 290.20 295.00 294.90 280.70 258.30 256.50

ELEV 69 280.80 273.90 284.20 285.50 270.80 292.40

ELEV 69 288.80 268.40 271.10 259.20 269.40 276.10

ELEV 69 279.10 280.30 275.30 271.10 273.30 250.70

ELEV 69 232.90 232.80 238.30 228.90 228.20 230.80

ELEV 69 238.20 234.70 250.40 262.40 284.70 267.10

ELEV 69 249.90 274.90 267.80

ELEV 70 175.10 187.20 191.10 177.20 219.60 233.20

ELEV 70 226.60 236.00 244.20 228.30 213.60 239.00

ELEV 70 263.70 266.30 264.50 272.70 272.70 282.80

ELEV 70 288.40 302.20 299.30 295.90 293.90 301.60

ELEV 70 308.60 305.40 302.30 310.60 307.90 306.60

ELEV 70 301.20 283.50 272.20 268.20 250.70 275.30

ELEV 70 287.90 299.00 293.20 286.50 267.30 255.50

ELEV 70 274.90 266.50 273.10 271.10 276.90 281.00

ELEV 70 281.20 283.80 272.50 269.10 275.20 269.40

ELEV 70 272.00 271.10 264.10 268.30 267.50 247.80

ELEV 70 243.20 256.50 240.70 233.60 234.40 236.80

ELEV 70 246.90 261.60 233.20 234.70 253.80 237.70

ELEV 70 255.70 264.70 263.00

ELEV 71 205.60 210.50 210.00 212.60 233.60 259.20

ELEV 71 259.10 258.40 247.90 222.30 209.50 239.10

ELEV 71 242.20 241.90 256.40 269.40 270.10 273.70

ELEV 71 283.90 289.10 296.30 295.10 297.80 304.60

ELEV 71 310.70 313.30 304.40 308.50 302.70 300.50

ELEV 71 302.90 284.10 265.20 253.60 243.20 260.80

ELEV 71 274.40 296.10 291.70 286.30 266.30 266.10

ELEV 71 267.90 257.20 269.20 263.30 274.70 279.30

ELEV 71 286.40 282.60 279.90 273.70 267.60 261.10

ELEV 71 255.30 257.80 257.30 258.20 256.00 250.50

ELEV 71 263.20 275.90 248.80 242.60 256.40 273.20

ELEV 71 275.60 276.60 263.50 249.20 233.10 238.00

ELEV 71 257.10 264.00 254.00

ELEV 72 196.20 212.60 197.30 201.40 223.80 260.50

ELEV 72 250.70 231.10 233.50 221.70 194.40 203.50

ELEV 72 206.30 227.90 251.80 268.50 272.80 276.90

ELEV 72 290.80 285.00 293.60 288.80 292.00 304.40

ELEV 72 306.20 312.00 304.10 296.00 297.80 292.40

ELEV 72 294.70 290.70 276.90 248.20 248.30 255.00

ELEV 72 281.60 284.90 290.10 289.50 266.90 264.40

ELEV 72 266.30 242.90 255.00 285.90 292.50 290.50

ELEV 72 282.60 283.20 276.50 281.90 273.90 276.50

ELEV 72 271.60 270.00 248.20 249.90 262.30 272.70

ELEV 72 284.20 274.60 251.50 248.30 282.60 290.50

ELEV 72 279.70 274.60 269.10 254.60 234.10 231.00

ELEV 72 245.50 266.40 244.40

ELEV 73 196.70 192.80 187.30 215.70 239.30 261.80

ELEV 73 231.90 207.30 201.20 210.70 178.50 195.90

ELEV 73 228.70 256.20 262.20 275.90 272.00 276.00

ELEV 73 294.20 296.90 292.50 280.00 296.80 304.60

ELEV 73 304.70 305.80 292.60 290.70 284.90 282.60

ELEV 73 288.80 285.90 268.60 242.10 244.50 258.60

ELEV 73 278.60 286.60 271.50 282.40 266.30 234.50

ELEV 73 247.60 256.20 273.50 291.00 287.70 286.40

ELEV 73 278.30 278.30 283.10 277.90 278.80 274.20

ELEV 73 261.40 255.30 251.20 265.10 275.30 288.90

ELEV 73 288.30 283.10 253.30 259.20 268.00 276.50

ELEV 73 277.40 276.60 269.00 258.90 247.70 230.60

ELEV 73 253.90 253.60 244.40

ELEV 74 187.40 177.70 181.50 209.90 239.20 229.00

ELEV 74 204.30 198.50 185.70 187.10 174.10 223.90

ELEV 74 244.10 268.20 277.70 272.40 270.30 283.10

ELEV 74 295.20 292.30 283.20 277.40 292.70 305.40

ELEV 74 302.50 284.40 262.80 283.30 282.70 276.20

ELEV 74 276.90 279.10 265.80 237.70 241.90 253.10

ELEV 74 272.40 282.80 249.60 241.40 233.40 237.90

ELEV 74 279.90 277.90 283.30 287.10 277.90 279.10

ELEV 74 280.60 290.70 279.80 286.80 273.10 265.70

ELEV 74 265.50 258.60 260.70 273.70 278.50 288.80

ELEV 74 293.00 283.00 255.20 261.00 271.40 279.30

ELEV 74 286.10 272.60 265.60 253.60 246.90 232.20

ELEV 74 252.80 251.50 247.30

ELEV 75 169.70 160.90 175.30 195.80 221.20 197.60

ELEV 75 190.60 183.40 170.30 171.50 213.90 231.70

ELEV 75 257.30 268.00 270.50 270.00 273.90 286.00

ELEV 75 278.40 269.10 272.60 287.80 298.50 305.50

ELEV 75 299.10 277.80 252.40 282.90 273.90 283.50

ELEV 75 281.00 269.70 251.60 230.00 228.30 249.30

ELEV 75 280.80 280.70 269.60 229.40 226.60 245.30

ELEV 75 282.20 276.40 270.90 274.50 262.00 280.00

ELEV 75 280.30 287.80 287.30 274.50 261.50 259.40

ELEV 75 261.20 268.10 270.60 266.10 271.00 274.00

ELEV 75 287.10 286.00 257.60 267.10 272.00 270.60

ELEV 75 272.20 269.20 270.20 276.20 264.50 235.30

ELEV 75 232.50 246.30 238.40

HILL 1 296.60 305.00 309.00 309.00 301.00 303.00

HILL 1 303.00 303.00 303.00 303.00 303.00 246.00

HILL 1 250.50 269.00 288.00 291.00 296.00 296.00

HILL 1 291.00 296.00 291.00 290.00 191.00 191.00

HILL 1 191.00 191.00 191.00 191.00 238.00 238.00

HILL 1 168.20 182.80 238.00 238.00 236.00 242.00

HILL 1 242.00 242.00 319.00 319.00 319.00 300.00

HILL 1 292.00 297.00 297.00 300.00 293.00 303.00

HILL	1	297.00	312.00	311.00	296.00	303.30	315.40
HILL	1	313.00	306.40	297.20	317.00	317.00	308.00
HILL	1	308.00	305.00	287.00	271.00	286.00	270.00
HILL	1	225.90	253.00	253.00	213.00	275.00	275.00
HILL	1	275.00	278.00	270.00			
HILL	2	309.00	308.00	309.00	309.00	303.00	303.00
HILL	2	303.00	303.00	303.00	303.00	302.00	245.00
HILL	2	255.00	270.00	296.00	296.00	296.00	296.00
HILL	2	296.00	296.00	291.00	217.00	191.00	191.00
HILL	2	191.00	191.00	191.00	191.00	238.00	143.60
HILL	2	238.00	242.00	242.00	238.00	238.00	236.00
HILL	2	242.00	242.00	242.00	319.00	319.00	319.00
HILL	2	300.00	300.00	300.00	298.00	292.00	310.00
HILL	2	315.00	310.00	315.00	288.80	301.70	311.30
HILL	2	317.70	311.80	313.00	312.00	317.00	308.00
HILL	2	294.00	294.00	287.00	268.00	233.00	252.00
HILL	2	253.00	253.00	253.00	186.60	276.00	276.00
HILL	2	233.00	275.00	276.00			
HILL	3	309.00	309.00	309.00	309.00	309.00	308.00
HILL	3	309.00	307.00	303.00	303.00	300.00	245.00
HILL	3	253.00	296.00	301.00	296.00	296.00	296.00
HILL	3	291.00	290.00	270.00	233.00	191.00	191.00
HILL	3	191.00	191.00	191.00	191.00	238.00	238.00
HILL	3	242.00	242.00	242.00	242.00	242.00	242.00
HILL	3	242.00	242.00	242.00	298.00	319.00	319.00
HILL	3	298.00	281.00	284.00	286.00	286.00	315.00
HILL	3	310.00	310.00	315.00	309.00	310.00	315.00
HILL	3	318.90	319.30	316.50	317.00	317.00	294.00
HILL	3	288.00	267.10	268.00	241.00	246.00	243.00
HILL	3	243.00	217.00	194.70	236.00	275.00	275.00
HILL	3	275.00	248.60	275.00			

HILL	4	309.00	309.00	309.00	309.00	309.00	309.00
HILL	4	309.00	309.00	305.00	303.00	214.00	225.00
HILL	4	255.00	294.00	303.00	270.00	269.00	290.00
HILL	4	273.00	269.00	233.00	233.00	191.00	191.00
HILL	4	191.00	191.00	191.00	191.00	145.00	238.00
HILL	4	242.00	242.00	242.00	242.00	242.00	242.00
HILL	4	242.00	242.00	285.00	300.00	300.00	293.00
HILL	4	277.00	275.00	275.00	274.00	282.30	289.00
HILL	4	315.00	315.00	315.00	308.40	314.20	314.00
HILL	4	327.00	318.00	317.00	318.00	318.00	282.00
HILL	4	288.00	288.00	265.00	248.00	243.00	242.00
HILL	4	224.30	217.00	230.00	231.00	232.00	233.00
HILL	4	275.00	252.00	251.00			
HILL	5	326.00	326.00	326.00	310.00	310.00	309.00
HILL	5	310.00	310.00	310.00	305.00	289.00	219.00
HILL	5	228.00	270.00	288.00	270.00	174.00	227.00
HILL	5	269.00	233.00	233.00	242.00	233.00	233.00
HILL	5	155.50	191.00	191.00	191.00	140.10	238.00
HILL	5	238.00	242.00	242.00	242.00	242.00	242.00
HILL	5	242.00	242.00	285.00	293.00	277.00	224.00
HILL	5	277.00	275.00	272.00	284.00	284.00	296.00
HILL	5	293.00	315.00	315.00	308.20	311.00	299.00
HILL	5	327.00	327.00	318.00	327.00	317.00	279.50
HILL	5	278.40	279.00	287.00	279.00	277.00	242.00
HILL	5	229.00	231.00	272.00	224.00	231.00	231.00
HILL	5	230.00	253.00	293.00			
HILL	6	326.00	310.00	309.00	309.00	310.00	310.00
HILL	6	310.00	305.00	310.00	310.00	295.00	228.00
HILL	6	228.00	228.00	270.00	269.00	182.00	227.00
HILL	6	227.00	233.00	233.00	233.00	251.00	165.00
HILL	6	233.00	251.00	191.00	162.00	147.80	230.00

HILL	6	224.00	224.00	224.00	242.00	242.00	242.00
HILL	6	242.00	277.00	275.00	275.00	232.00	231.00
HILL	6	232.50	277.00	284.00	286.00	286.00	280.00
HILL	6	297.00	315.00	315.00	314.00	315.00	312.00
HILL	6	316.00	327.00	327.00	327.00	261.60	284.00
HILL	6	269.90	277.00	279.00	277.00	277.00	277.00
HILL	6	269.00	269.00	272.00	273.00	272.00	293.00
HILL	6	293.00	293.00	293.00			
HILL	7	309.00	305.00	305.00	305.00	305.00	310.00
HILL	7	306.00	305.00	310.00	310.00	296.00	225.00
HILL	7	227.00	228.00	252.00	230.00	216.00	221.00
HILL	7	216.00	228.00	233.00	251.00	242.00	233.00
HILL	7	251.00	251.00	241.00	154.30	162.00	242.00
HILL	7	238.00	224.00	207.00	224.00	242.00	242.00
HILL	7	242.00	272.00	277.00	284.00	283.00	232.00
HILL	7	275.00	284.00	284.00	269.00	282.00	297.00
HILL	7	277.00	316.00	316.00	285.00	281.00	296.00
HILL	7	316.00	327.00	327.00	273.00	273.00	268.00
HILL	7	265.20	272.40	272.00	277.00	271.00	277.00
HILL	7	270.00	269.00	269.00	297.00	296.00	296.00
HILL	7	293.00	293.00	293.00			
HILL	8	306.00	305.00	305.00	300.00	305.00	305.00
HILL	8	295.00	305.00	310.00	310.00	299.00	294.00
HILL	8	294.00	228.00	228.00	233.00	233.00	233.00
HILL	8	230.00	219.30	233.00	251.00	251.00	251.00
HILL	8	252.00	252.00	251.00	251.00	251.00	242.00
HILL	8	242.00	231.00	207.00	224.00	242.00	224.00
HILL	8	147.60	304.00	307.00	307.00	285.00	232.00
HILL	8	275.00	286.00	272.00	300.00	315.00	315.00
HILL	8	280.00	316.00	310.00	269.00	270.00	263.00
HILL	8	316.00	327.00	317.00	246.00	273.00	269.00

HILL 8 271.00 279.00 276.00 279.00 277.00 274.00

HILL 8 274.00 269.00 269.00 272.00 273.00 290.00

HILL 8 296.00 293.00 293.00

HILL 9 305.00 305.00 297.40 305.00 305.00 298.00

HILL 9 294.00 299.00 310.00 310.00 310.00 310.00

HILL 9 310.00 310.00 294.00 294.00 233.00 233.00

HILL 9 233.00 233.00 231.90 250.00 252.00 251.00

HILL 9 252.00 251.00 251.00 251.00 251.00 242.00

HILL 9 242.00 230.00 224.00 224.00 242.00 304.00

HILL 9 307.00 307.00 307.00 308.00 307.00 299.00

HILL 9 305.00 287.00 227.00 316.00 316.00 316.00

HILL 9 315.00 315.00 268.00 316.00 312.00 265.00

HILL 9 327.00 296.00 241.90 249.00 260.00 279.00

HILL 9 279.00 276.00 279.00 279.00 274.00 274.00

HILL 9 274.00 296.00 269.00 269.00 272.00 270.00

HILL 9 297.00 293.00 281.00

HILL 10 308.00 305.00 287.30 294.00 293.70 293.70

HILL 10 291.00 295.00 310.00 310.00 310.00 310.00

HILL 10 310.00 310.00 310.00 252.00 238.00 252.00

HILL 10 243.00 243.00 233.00 242.00 251.00 251.00

HILL 10 251.00 251.00 251.00 251.00 251.00 251.00

HILL 10 242.00 231.00 224.00 237.00 242.00 307.00

HILL 10 307.00 308.00 308.00 308.00 308.00 308.00

HILL 10 315.00 307.00 306.00 316.00 316.00 316.00

HILL 10 316.00 268.00 285.00 316.00 316.00 265.00

HILL 10 314.00 327.00 244.00 249.00 268.00 279.00

HILL 10 279.00 275.00 274.00 274.00 274.00 274.00

HILL 10 280.00 296.00 296.00 297.00 296.00 290.00

HILL 10 297.00 293.00 275.80

HILL 11 305.00 302.00 293.00 296.40 297.80 296.00

HILL 11 295.00 294.00 294.00 310.00 310.00 310.00

HILL	11	310.00	310.00	252.00	250.00	191.00	237.00
HILL	11	224.00	241.00	233.00	242.00	242.00	251.00
HILL	11	251.00	251.00	251.00	235.00	251.00	251.00
HILL	11	242.00	231.00	242.00	259.00	304.00	307.00
HILL	11	304.00	308.00	308.00	308.00	308.00	308.00
HILL	11	308.00	315.00	315.00	315.00	315.00	316.00
HILL	11	316.00	316.00	316.00	316.00	316.00	269.00
HILL	11	265.00	312.00	249.00	251.00	257.00	261.00
HILL	11	257.00	265.00	263.00	272.90	267.70	280.00
HILL	11	275.00	280.00	296.00	295.00	296.00	294.00
HILL	11	297.00	297.00	290.00			
HILL	12	283.00	278.90	288.90	297.10	292.30	297.00
HILL	12	301.00	310.00	310.00	310.00	310.00	252.00
HILL	12	310.00	310.00	252.00	180.00	180.00	237.00
HILL	12	252.00	236.00	239.00	242.00	243.00	249.10
HILL	12	240.00	251.00	251.00	251.00	278.00	242.00
HILL	12	242.00	242.00	242.00	242.00	282.00	307.00
HILL	12	307.00	307.00	308.00	308.00	308.00	308.00
HILL	12	308.00	308.00	308.00	308.00	293.00	281.00
HILL	12	291.00	316.00	316.00	316.00	315.00	265.00
HILL	12	268.00	265.00	265.00	265.00	266.00	280.00
HILL	12	280.00	280.00	279.00	278.20	273.00	285.00
HILL	12	275.00	272.90	296.00	295.10	296.70	294.40
HILL	12	297.00	297.00	292.00			
HILL	13	283.00	283.00	291.00	306.00	302.50	299.70
HILL	13	302.00	310.00	310.00	285.00	252.00	252.00
HILL	13	310.00	310.00	310.00	252.00	237.00	252.00
HILL	13	237.00	237.00	252.00	252.00	245.30	251.00
HILL	13	251.00	240.00	251.00	251.00	283.00	242.00
HILL	13	242.00	237.80	239.00	241.00	304.00	307.00
HILL	13	307.00	308.00	308.00	308.00	308.00	308.00

HILL	13	302.00	307.00	308.00	307.00	288.00	248.80
HILL	13	290.00	295.00	290.00	291.00	290.00	215.00
HILL	13	265.00	265.00	248.00	251.00	251.00	259.00
HILL	13	280.00	280.00	276.00	274.00	269.20	274.60
HILL	13	284.50	275.00	290.00	287.60	288.40	290.90
HILL	13	292.00	296.00	299.00			
HILL	14	300.00	301.00	285.90	298.00	306.80	308.70
HILL	14	310.00	310.00	310.00	285.00	244.70	252.00
HILL	14	285.00	285.00	310.00	283.00	252.00	237.00
HILL	14	237.00	237.00	252.00	252.00	247.00	252.00
HILL	14	252.00	277.00	237.00	277.00	287.00	242.00
HILL	14	242.00	242.00	239.00	259.00	304.00	307.00
HILL	14	307.00	308.00	308.00	308.00	308.00	307.00
HILL	14	285.00	285.00	294.00	294.00	291.00	279.00
HILL	14	290.00	293.00	290.00	293.00	291.00	290.00
HILL	14	284.00	259.00	264.00	259.00	259.00	265.00
HILL	14	266.00	272.00	273.00	273.00	275.70	282.00
HILL	14	270.60	270.70	279.00	271.70	284.70	281.70
HILL	14	288.00	290.00	320.00			
HILL	15	296.00	296.00	291.00	295.90	301.40	296.50
HILL	15	284.00	285.00	285.00	283.00	245.00	286.00
HILL	15	283.00	264.00	262.00	269.00	237.00	237.00
HILL	15	237.00	237.00	252.00	252.00	252.00	242.00
HILL	15	277.00	281.00	286.00	289.00	289.00	286.00
HILL	15	282.00	268.00	259.00	259.00	267.00	274.00
HILL	15	307.00	308.00	308.00	308.00	307.00	299.00
HILL	15	285.30	287.00	293.00	290.00	284.00	278.70
HILL	15	290.00	290.00	290.00	291.00	291.00	290.00
HILL	15	289.00	265.00	264.00	254.00	264.00	260.60
HILL	15	280.00	283.00	283.00	283.00	278.00	281.00
HILL	15	282.00	275.00	272.10	266.10	298.00	300.00

HILL	15	295.00	299.00	320.00			
HILL	16	281.00	289.00	290.00	305.00	305.00	298.30
HILL	16	286.70	277.80	278.00	257.00	262.00	265.00
HILL	16	235.00	238.00	265.00	269.00	262.00	252.00
HILL	16	252.00	252.00	267.00	267.00	278.00	235.60
HILL	16	243.00	283.00	286.00	289.00	249.00	281.00
HILL	16	227.00	274.00	259.00	259.00	258.00	267.00
HILL	16	287.00	304.00	308.00	308.00	304.00	301.00
HILL	16	299.00	290.60	283.00	288.00	286.70	286.50
HILL	16	286.00	290.00	290.00	290.00	290.00	290.00
HILL	16	286.00	264.00	219.00	264.00	264.00	265.00
HILL	16	283.00	283.00	283.00	283.00	283.00	282.00
HILL	16	280.00	278.00	273.10	274.60	297.00	296.70
HILL	16	297.50	293.90	290.00			
HILL	17	284.00	296.00	274.10	291.00	299.80	302.00
HILL	17	302.00	270.30	267.70	261.80	262.00	248.00
HILL	17	262.00	269.00	270.00	265.00	210.00	210.00
HILL	17	265.00	282.00	283.00	265.00	265.00	265.00
HILL	17	283.00	289.00	283.00	287.00	248.00	281.00
HILL	17	234.00	286.00	273.00	273.00	271.00	268.00
HILL	17	270.50	279.00	287.00	308.00	300.00	306.40
HILL	17	304.00	293.90	291.70	289.80	290.00	285.20
HILL	17	278.00	290.00	290.00	291.00	289.00	290.00
HILL	17	290.00	219.00	219.00	265.00	264.00	283.00
HILL	17	283.00	283.00	280.00	281.00	283.00	283.00
HILL	17	283.00	287.00	275.90	295.00	280.30	296.00
HILL	17	299.50	298.50	299.20			
HILL	18	284.00	289.00	285.00	300.00	300.00	302.00
HILL	18	285.80	279.40	273.50	263.00	264.00	262.00
HILL	18	262.00	244.00	231.00	249.00	237.00	210.00
HILL	18	218.00	273.00	281.00	265.00	265.00	265.00

HILL	18	265.20	278.00	283.00	286.00	247.60	244.00
HILL	18	230.00	279.00	286.00	292.00	292.00	292.00
HILL	18	287.00	283.20	282.10	287.00	293.70	304.00
HILL	18	304.00	303.00	290.90	288.00	283.10	287.00
HILL	18	289.00	290.00	290.00	290.00	292.00	290.00
HILL	18	288.00	260.00	202.00	267.00	280.00	283.00
HILL	18	281.00	264.00	277.00	281.00	283.00	280.00
HILL	18	283.00	287.00	285.60	294.00	284.30	294.60
HILL	18	304.20	307.30	305.10			
HILL	19	284.00	288.00	289.00	287.00	284.80	299.00
HILL	19	281.80	289.00	265.00	275.00	234.40	257.00
HILL	19	243.00	255.00	255.00	248.00	238.00	238.00
HILL	19	233.00	237.00	282.00	281.00	283.00	282.00
HILL	19	270.50	275.70	281.00	286.00	255.00	260.00
HILL	19	265.00	286.00	286.00	289.00	273.00	287.00
HILL	19	292.00	287.00	284.00	285.80	288.40	298.50
HILL	19	304.60	301.60	304.00	302.00	268.60	283.00
HILL	19	292.00	292.00	290.00	290.00	241.00	281.00
HILL	19	287.00	282.00	268.00	274.00	281.00	247.00
HILL	19	244.70	267.00	281.00	293.00	284.00	266.60
HILL	19	286.00	305.00	292.20	294.70	288.60	297.00
HILL	19	307.10	305.90	307.50			
HILL	20	286.00	276.00	282.00	288.50	297.10	289.80
HILL	20	288.40	284.00	270.00	250.00	257.00	256.00
HILL	20	253.00	264.00	264.00	266.00	238.00	238.00
HILL	20	231.30	273.00	273.00	273.00	281.00	289.00
HILL	20	283.00	279.20	277.40	286.00	265.00	286.00
HILL	20	285.00	288.00	288.00	286.00	272.60	272.00
HILL	20	292.00	290.00	274.80	285.00	288.10	296.60
HILL	20	301.00	303.10	302.00	303.00	283.20	284.00
HILL	20	310.00	284.00	286.00	265.00	232.00	233.00

HILL	20	282.00	282.00	268.00	268.00	267.00	247.00
HILL	20	247.00	280.00	296.00	284.00	278.00	283.00
HILL	20	286.60	305.00	303.40	298.10	292.80	301.00
HILL	20	302.10	300.80	312.90			
HILL	21	276.30	280.90	278.10	284.20	289.70	296.00
HILL	21	301.00	293.00	269.00	289.00	262.00	262.10
HILL	21	264.00	264.00	264.00	264.00	224.00	229.00
HILL	21	238.00	273.00	273.00	273.00	268.70	273.00
HILL	21	289.00	286.80	282.90	278.80	288.00	288.00
HILL	21	238.30	286.00	288.00	288.00	285.00	285.00
HILL	21	287.10	292.00	284.00	282.00	289.60	298.00
HILL	21	305.20	305.00	307.00	310.00	285.20	310.00
HILL	21	268.00	268.00	285.00	285.00	241.00	282.00
HILL	21	268.00	264.00	268.00	268.00	247.00	267.00
HILL	21	284.00	284.00	285.00	284.00	279.00	289.60
HILL	21	293.00	299.00	302.60	303.00	290.40	305.00
HILL	21	321.00	322.00	314.10			
HILL	22	281.20	284.60	285.30	291.00	285.50	300.00
HILL	22	301.00	301.00	285.00	300.00	264.00	264.00
HILL	22	244.70	248.00	264.00	266.00	231.00	229.00
HILL	22	258.00	273.00	273.00	273.00	269.00	265.90
HILL	22	277.00	278.00	276.50	283.00	283.00	278.00
HILL	22	278.00	278.00	288.00	288.00	287.00	282.10
HILL	22	285.70	282.30	279.80	281.40	294.00	308.00
HILL	22	308.40	305.70	305.00	305.00	310.00	310.00
HILL	22	285.00	283.00	287.00	283.00	253.70	268.00
HILL	22	263.00	260.00	264.00	268.00	263.00	284.00
HILL	22	236.00	228.50	293.00	300.00	300.00	299.00
HILL	22	300.00	307.00	306.20	298.60	309.00	319.00
HILL	22	318.80	327.00	323.40			
HILL	23	287.00	287.00	292.00	292.00	289.00	296.00

HILL	23	301.00	301.00	301.00	300.00	264.00	264.00
HILL	23	264.00	246.00	246.00	248.00	260.00	266.00
HILL	23	266.00	271.00	248.00	270.00	281.00	279.00
HILL	23	275.00	285.80	287.00	279.00	283.00	277.00
HILL	23	275.00	278.00	287.00	288.00	287.00	282.00
HILL	23	280.10	283.00	277.10	283.60	286.00	288.60
HILL	23	299.00	299.70	305.40	301.80	305.00	272.40
HILL	23	285.00	281.80	280.50	281.00	261.10	262.30
HILL	23	262.00	264.00	268.00	268.00	211.00	236.00
HILL	23	280.00	299.00	300.00	294.00	293.00	289.40
HILL	23	291.40	297.50	300.00	312.00	306.70	315.00
HILL	23	319.40	324.00	326.00			
HILL	24	297.00	292.00	292.00	292.00	292.00	295.00
HILL	24	296.00	300.00	301.00	301.00	264.00	264.00
HILL	24	242.00	248.00	233.00	234.30	247.30	260.00
HILL	24	266.00	276.00	247.00	257.00	256.70	281.00
HILL	24	277.30	279.00	284.00	287.00	261.00	268.00
HILL	24	278.00	278.00	287.00	291.00	288.00	282.00
HILL	24	279.00	284.00	290.00	286.00	292.00	295.50
HILL	24	296.40	301.70	305.40	302.00	305.00	285.20
HILL	24	285.60	281.90	287.00	287.00	265.00	267.00
HILL	24	246.00	268.00	268.00	260.00	213.00	223.00
HILL	24	290.00	231.00	257.00	290.00	291.00	292.00
HILL	24	280.70	306.00	312.00	310.00	297.90	317.00
HILL	24	305.00	311.00	315.00			
HILL	25	297.00	289.00	275.00	266.40	292.00	293.00
HILL	25	296.00	285.00	212.00	300.00	264.00	213.00
HILL	25	242.00	264.00	266.00	266.00	251.80	266.20
HILL	25	266.00	276.00	292.00	292.00	267.60	276.60
HILL	25	278.60	279.00	286.00	274.00	274.00	268.00
HILL	25	278.00	283.00	283.00	287.00	287.00	287.00

HILL	25	284.00	284.00	286.00	282.20	290.00	294.90
HILL	25	297.60	307.10	304.20	304.00	292.00	296.00
HILL	25	283.70	276.00	285.00	287.00	287.00	287.00
HILL	25	267.00	264.00	263.00	225.00	225.00	227.00
HILL	25	216.00	215.80	299.00	297.00	299.00	299.00
HILL	25	302.00	312.00	312.00	298.00	311.00	317.00
HILL	25	316.00	317.00	312.00			
HILL	26	297.00	292.00	272.10	280.00	292.00	292.00
HILL	26	301.00	292.00	212.30	214.00	264.00	248.00
HILL	26	266.00	266.00	266.00	266.00	260.70	261.50
HILL	26	263.80	271.00	292.00	293.00	292.00	286.00
HILL	26	285.50	279.20	289.00	269.00	271.60	285.00
HILL	26	288.00	283.00	283.00	283.00	277.00	277.00
HILL	26	282.00	283.00	278.00	284.00	290.70	292.70
HILL	26	302.30	304.90	308.00	291.80	290.00	294.00
HILL	26	286.00	290.00	287.00	250.40	249.00	248.00
HILL	26	287.00	268.00	252.00	226.00	254.00	274.00
HILL	26	310.00	311.00	311.00	311.00	311.00	311.00
HILL	26	311.00	312.00	312.00	312.00	320.00	321.00
HILL	26	309.00	309.00	307.00			
HILL	27	295.00	285.30	278.50	276.00	290.00	295.00
HILL	27	292.00	292.00	214.00	214.00	215.00	215.00
HILL	27	214.00	233.00	238.00	266.00	259.90	264.00
HILL	27	265.10	268.20	269.90	275.20	290.30	283.60
HILL	27	286.30	278.40	287.00	289.00	282.90	283.00
HILL	27	289.00	283.00	278.60	274.00	270.70	273.00
HILL	27	277.00	271.60	280.40	284.40	285.00	295.60
HILL	27	301.20	305.90	303.00	301.00	291.00	284.40
HILL	27	279.80	290.00	295.00	295.00	287.00	287.00
HILL	27	281.00	255.00	250.00	253.00	254.00	254.00
HILL	27	224.00	311.00	311.00	311.00	309.00	311.00

HILL	27	311.00	311.00	311.00	311.00	310.00	310.00
HILL	27	309.00	309.00	307.00			
HILL	28	295.00	286.40	292.00	258.00	276.00	282.00
HILL	28	223.00	223.00	276.00	274.00	215.00	215.00
HILL	28	207.90	279.00	270.00	266.00	265.00	292.00
HILL	28	293.00	291.00	270.00	283.20	289.20	286.20
HILL	28	286.00	279.20	284.10	292.00	286.90	288.00
HILL	28	262.80	269.40	279.50	272.90	268.10	274.10
HILL	28	268.00	276.00	278.40	282.00	290.10	298.00
HILL	28	302.30	300.40	296.40	294.00	303.00	287.00
HILL	28	283.40	287.00	284.00	284.00	282.00	281.00
HILL	28	253.00	255.00	244.60	254.00	254.00	237.00
HILL	28	222.20	311.00	311.00	311.00	311.00	311.00
HILL	28	289.10	293.40	297.00	308.00	310.00	310.00
HILL	28	309.00	309.00	297.00			
HILL	29	279.00	280.00	282.00	263.70	266.00	282.00
HILL	29	266.00	207.90	265.00	288.00	288.00	288.00
HILL	29	288.00	288.00	289.00	294.00	294.00	294.00
HILL	29	294.00	294.00	277.90	284.10	286.00	289.00
HILL	29	291.20	287.30	289.10	289.90	287.70	275.50
HILL	29	290.00	292.00	275.00	275.40	275.00	263.80
HILL	29	250.20	279.00	284.00	281.20	287.50	296.00
HILL	29	298.00	300.70	293.40	293.00	293.00	287.00
HILL	29	279.00	284.00	280.00	282.00	281.00	269.00
HILL	29	248.50	248.60	254.00	254.00	218.30	233.50
HILL	29	237.00	311.00	311.00	311.00	311.00	311.00
HILL	29	311.00	309.40	307.00	308.10	310.00	289.60
HILL	29	290.00	288.00	294.90			
HILL	30	297.00	290.00	289.00	264.10	270.00	285.00
HILL	30	292.00	292.00	281.00	288.00	287.00	283.00
HILL	30	288.00	288.00	286.00	280.00	284.00	293.00

HILL 30 282.20 292.00 289.10 289.90 288.90 290.50

HILL 30 289.60 288.70 291.00 293.30 296.00 293.00

HILL 30 291.10 291.00 284.70 277.90 273.20 265.00

HILL 30 256.00 279.00 273.00 283.30 286.90 293.40

HILL 30 300.10 297.90 296.00 288.30 291.00 291.00

HILL 30 283.00 275.50 280.50 278.50 272.20 263.80

HILL 30 266.00 266.00 254.00 254.00 222.00 216.90

HILL 30 237.00 311.00 311.00 311.00 311.00 311.00

HILL 30 311.00 309.00 297.60 309.00 308.00 300.00

HILL 30 294.10 295.00 300.50

HILL 31 297.00 292.00 265.00 270.00 270.00 270.00

HILL 31 270.00 290.00 288.00 288.00 288.00 287.00

HILL 31 286.00 288.00 288.00 274.60 272.50 281.00

HILL 31 290.00 292.00 286.80 282.90 286.10 288.60

HILL 31 285.10 284.20 286.10 291.40 291.80 290.10

HILL 31 291.20 288.80 287.10 280.80 281.00 265.00

HILL 31 254.00 256.40 276.00 278.30 295.00 297.20

HILL 31 299.10 294.50 289.60 285.00 291.00 293.00

HILL 31 274.00 282.00 270.40 273.10 267.20 255.60

HILL 31 267.00 263.00 222.00 216.00 220.00 234.00

HILL 31 237.00 311.00 311.00 311.00 311.00 309.00

HILL 31 309.00 309.00 283.00 288.50 296.00 302.00

HILL 31 300.80 296.60 297.00

HILL 32 297.00 283.00 270.00 270.00 270.00 282.00

HILL 32 270.00 273.00 288.00 288.00 287.00 287.00

HILL 32 274.00 287.00 288.00 284.10 284.00 281.00

HILL 32 288.70 288.00 278.50 272.50 279.60 289.00

HILL 32 280.00 281.00 279.00 288.90 290.90 287.50

HILL 32 285.50 283.80 285.20 287.90 282.50 269.50

HILL 32 262.40 258.20 281.00 278.80 288.30 292.50

HILL 32 290.00 292.00 287.60 277.40 288.00 291.00

HILL	32	277.00	278.00	274.00	274.00	260.70	249.40
HILL	32	265.00	256.00	240.00	240.00	240.00	204.00
HILL	32	209.00	311.00	311.00	311.00	312.00	309.00
HILL	32	306.00	309.00	298.00	297.90	301.40	303.60
HILL	32	298.10	289.30	303.00			
HILL	33	297.00	295.00	289.00	270.00	270.00	270.00
HILL	33	289.00	288.00	288.00	288.00	274.00	287.00
HILL	33	287.00	287.00	286.90	287.00	271.90	283.00
HILL	33	285.00	280.80	281.00	268.00	266.00	268.50
HILL	33	271.40	276.20	283.50	286.80	286.60	288.00
HILL	33	274.70	283.00	284.50	282.90	280.80	272.40
HILL	33	272.00	269.00	274.00	274.90	285.90	295.00
HILL	33	283.70	281.20	290.00	283.70	282.00	282.00
HILL	33	282.00	259.00	274.00	264.00	274.00	274.00
HILL	33	264.00	264.00	240.00	240.00	242.00	207.10
HILL	33	208.00	302.00	309.00	299.00	299.00	299.00
HILL	33	299.00	313.00	306.00	310.10	310.00	302.00
HILL	33	296.00	279.80	290.40			
HILL	34	297.00	297.00	297.00	289.00	270.00	270.00
HILL	34	278.00	288.00	288.00	287.00	288.00	288.00
HILL	34	287.00	283.00	288.00	288.00	259.40	285.00
HILL	34	288.00	275.00	277.00	286.00	282.00	280.60
HILL	34	278.00	281.10	283.90	289.30	284.20	279.00
HILL	34	287.00	281.00	282.30	276.50	278.90	279.50
HILL	34	271.00	260.30	261.00	269.00	275.50	278.10
HILL	34	280.30	282.00	282.50	276.40	280.50	267.70
HILL	34	281.00	281.00	274.00	264.00	274.00	273.00
HILL	34	272.00	263.00	242.00	237.00	254.00	237.00
HILL	34	299.00	302.00	302.00	302.00	302.00	298.00
HILL	34	299.00	307.00	306.50	314.30	307.20	300.00
HILL	34	291.00	288.00	292.00			

HILL	35	295.00	297.00	297.00	292.00	270.00	270.00
HILL	35	272.00	288.00	288.00	288.00	288.00	288.00
HILL	35	288.00	288.00	288.00	288.00	252.20	286.00
HILL	35	277.00	272.30	276.00	280.00	283.20	282.50
HILL	35	278.50	272.50	277.70	284.80	282.40	282.00
HILL	35	287.00	287.00	274.90	284.00	266.70	268.00
HILL	35	267.10	267.70	270.50	270.10	268.50	274.80
HILL	35	276.80	277.10	275.70	276.00	270.20	276.00
HILL	35	281.00	276.00	283.00	277.00	271.00	273.00
HILL	35	263.00	257.00	249.40	255.00	255.00	254.00
HILL	35	301.00	302.00	302.00	301.00	299.00	290.40
HILL	35	302.00	301.00	300.40	307.60	308.00	317.00
HILL	35	308.00	288.00	261.30			
HILL	36	269.00	261.00	289.00	289.00	270.00	270.00
HILL	36	287.00	288.00	288.00	288.00	288.00	288.00
HILL	36	288.00	288.00	288.00	288.00	255.00	276.00
HILL	36	274.00	268.90	273.00	274.00	281.00	275.00
HILL	36	279.00	283.00	278.60	279.80	275.90	269.00
HILL	36	287.00	278.00	287.00	268.00	266.90	264.00
HILL	36	264.00	270.20	266.00	266.00	270.00	267.90
HILL	36	273.00	274.00	273.00	273.70	276.00	281.00
HILL	36	281.00	277.00	283.00	277.00	267.00	273.00
HILL	36	263.00	249.20	252.00	246.00	248.00	246.00
HILL	36	308.00	308.00	299.00	299.00	299.00	295.90
HILL	36	294.00	299.00	293.90	301.00	295.30	280.10
HILL	36	308.00	262.00	262.00			
HILL	37	254.30	256.00	261.00	289.00	289.00	280.00
HILL	37	284.00	260.00	258.00	248.00	287.00	288.00
HILL	37	288.00	288.00	288.00	288.00	287.00	276.00
HILL	37	273.00	268.00	268.00	281.00	281.00	272.00
HILL	37	267.10	272.10	284.00	283.00	271.80	280.00

HILL 37 259.00 246.90 244.00 272.00 271.10 264.00

HILL 37 264.00 269.50 274.00 266.00 273.00 275.00

HILL 37 249.30 273.00 273.00 274.00 274.00 278.00

HILL 37 275.00 283.00 283.00 277.00 263.10 268.90

HILL 37 270.10 257.60 252.00 252.00 288.00 308.00

HILL 37 308.00 308.00 299.00 299.00 299.00 295.00

HILL 37 295.50 297.40 286.60 288.90 290.30 286.80

HILL 37 277.00 288.00 294.00

HILL 38 258.00 258.00 256.00 289.00 290.00 280.00

HILL 38 280.00 280.00 260.00 256.00 248.00 287.00

HILL 38 288.00 288.00 241.00 269.00 270.00 270.00

HILL 38 272.00 273.00 264.00 246.00 246.20 258.20

HILL 38 263.20 269.00 269.00 268.00 276.00 274.00

HILL 38 270.00 240.30 245.50 272.00 266.90 264.00

HILL 38 264.00 274.00 271.00 266.00 276.00 262.90

HILL 38 265.70 272.00 251.70 250.00 278.00 278.00

HILL 38 278.00 282.00 283.00 283.00 271.00 260.60

HILL 38 273.00 272.00 273.00 288.00 308.00 308.00

HILL 38 308.00 308.00 296.00 287.00 295.00 291.50

HILL 38 296.10 293.80 285.70 278.80 284.00 281.00

HILL 38 281.00 296.00 284.00

HILL 39 289.00 289.00 289.00 287.00 290.00 280.00

HILL 39 280.00 280.00 259.00 256.00 250.00 254.00

HILL 39 280.00 287.00 270.00 270.00 269.00 267.00

HILL 39 267.00 248.00 256.00 251.20 252.90 259.10

HILL 39 256.70 261.00 264.00 268.00 272.00 265.00

HILL 39 270.00 270.00 243.90 272.00 272.00 264.00

HILL 39 264.00 273.70 276.00 270.50 273.90 265.40

HILL 39 272.00 273.00 272.00 272.00 264.00 275.90

HILL 39 275.10 271.40 283.00 283.00 246.00 262.00

HILL 39 273.00 273.00 273.00 272.00 308.00 308.00

HILL	39	308.00	308.00	275.00	286.70	297.00	293.60
HILL	39	287.90	300.00	292.00	288.00	284.90	282.00
HILL	39	292.00	296.00	292.00			
HILL	40	289.00	246.00	289.00	290.00	290.00	280.00
HILL	40	280.00	280.00	280.00	258.00	254.00	279.00
HILL	40	280.00	270.00	270.00	270.00	269.20	261.60
HILL	40	255.00	244.90	257.00	260.80	260.20	255.50
HILL	40	255.10	255.40	265.00	266.00	253.20	270.00
HILL	40	270.30	262.80	247.00	252.00	265.00	264.90
HILL	40	264.20	269.20	274.00	276.30	280.00	280.00
HILL	40	273.00	269.00	268.00	270.40	273.90	271.10
HILL	40	274.90	276.00	271.00	283.00	283.00	229.60
HILL	40	228.90	272.00	273.00	308.00	308.00	308.00
HILL	40	308.00	308.00	308.00	290.00	287.90	295.40
HILL	40	300.00	300.00	300.00	288.00	288.00	274.00
HILL	40	299.00	294.00	287.00			
HILL	41	246.00	289.00	289.00	290.00	290.00	280.00
HILL	41	280.00	265.00	280.00	253.60	280.00	280.00
HILL	41	280.00	270.00	261.00	257.00	270.00	258.00
HILL	41	260.00	259.00	260.00	261.80	258.20	252.00
HILL	41	249.00	244.50	232.00	261.00	261.30	260.20
HILL	41	264.90	269.00	253.20	250.20	262.70	335.00
HILL	41	335.00	330.00	329.00	284.90	313.00	317.00
HILL	41	312.00	274.00	273.30	280.40	279.10	267.60
HILL	41	265.90	270.00	269.00	271.00	271.00	265.00
HILL	41	235.00	227.00	227.00	308.00	308.00	308.00
HILL	41	308.00	308.00	308.00	307.00	292.00	298.00
HILL	41	306.00	300.00	295.00	271.00	288.00	274.00
HILL	41	304.00	278.00	290.00			
HILL	42	289.00	290.00	290.00	290.00	290.00	280.00
HILL	42	265.00	260.00	255.90	280.00	263.60	264.00

HILL 42 279.00 280.00 261.00 269.00 270.00 232.80

HILL 42 282.00 260.00 260.00 263.00 258.00 257.00

HILL 42 232.00 232.00 256.00 256.00 259.00 263.00

HILL 42 268.50 264.90 256.60 255.10 335.00 337.00

HILL 42 337.00 337.00 329.00 296.80 317.00 330.00

HILL 42 315.00 285.00 278.00 278.00 275.70 276.00

HILL 42 262.00 267.00 267.00 258.00 261.00 263.00

HILL 42 262.00 213.00 211.00 307.00 308.00 308.00

HILL 42 308.00 308.00 303.00 300.70 306.00 306.00

HILL 42 306.00 306.00 271.00 271.00 271.00 293.00

HILL 42 292.00 303.00 304.00

HILL 43 290.00 290.00 290.00 290.00 290.00 280.00

HILL 43 265.00 255.30 263.50 280.00 269.90 267.00

HILL 43 280.00 280.00 264.00 280.00 282.00 283.00

HILL 43 288.00 288.00 290.00 286.00 286.00 286.00

HILL 43 286.00 284.00 262.00 258.00 262.00 259.70

HILL 43 262.80 257.20 263.30 263.60 335.00 337.00

HILL 43 337.00 335.00 329.00 317.00 326.00 338.00

HILL 43 315.00 290.60 285.30 286.00 273.00 261.00

HILL 43 262.20 267.00 251.50 261.00 262.00 262.00

HILL 43 262.00 261.00 286.00 304.00 252.00 308.00

HILL 43 308.00 308.00 308.00 292.00 285.10 284.00

HILL 43 306.00 306.00 270.00 262.00 292.00 292.00

HILL 43 279.00 282.40 288.00

HILL 44 290.00 290.00 282.00 290.00 282.00 279.00

HILL 44 257.00 280.00 280.00 279.00 276.30 276.00

HILL 44 278.00 280.00 282.00 283.00 289.00 287.00

HILL 44 283.00 280.00 290.00 285.00 286.00 286.00

HILL 44 285.00 281.00 262.00 241.70 239.70 253.00

HILL 44 257.00 254.70 262.20 336.00 337.00 337.00

HILL 44 337.00 333.20 330.00 317.00 337.00 327.00

HILL 44 315.00 315.00 309.00 309.00 274.00 244.90

HILL 44 264.00 242.00 242.90 252.00 262.00 262.00

HILL 44 262.00 242.00 266.00 263.00 252.00 308.00

HILL 44 308.00 308.00 308.00 307.00 284.00 295.00

HILL 44 306.00 287.00 288.00 290.00 290.00 282.00

HILL 44 287.00 291.80 289.20

HILL 45 290.00 290.00 290.00 290.00 282.00 282.00

HILL 45 282.00 280.00 280.00 274.30 271.10 278.00

HILL 45 279.00 279.00 283.00 282.00 282.00 283.00

HILL 45 282.00 276.70 291.00 277.50 280.30 282.90

HILL 45 281.00 261.00 263.50 276.00 250.10 256.10

HILL 45 253.80 253.10 259.60 336.00 337.00 336.00

HILL 45 329.50 336.50 337.00 324.00 341.00 326.00

HILL 45 312.30 301.60 312.00 318.00 312.00 250.00

HILL 45 242.00 235.00 238.00 256.00 256.00 285.00

HILL 45 267.00 248.00 272.00 265.00 250.00 305.00

HILL 45 308.00 308.00 308.00 308.00 305.00 295.00

HILL 45 306.00 288.00 289.00 289.00 289.00 286.00

HILL 45 282.20 283.90 289.90

HILL 46 279.00 290.00 290.00 290.00 282.00 282.00

HILL 46 282.00 282.00 279.00 261.30 271.00 259.00

HILL 46 257.00 278.00 270.00 254.00 251.40 267.40

HILL 46 280.00 281.00 286.00 270.90 276.50 278.00

HILL 46 277.50 268.30 271.10 276.00 262.30 258.00

HILL 46 252.00 255.00 260.00 335.00 336.00 336.00

HILL 46 333.40 333.60 338.00 336.00 341.00 326.00

HILL 46 325.40 312.90 315.00 317.00 308.00 283.00

HILL 46 248.30 256.00 258.00 256.00 289.00 287.00

HILL 46 265.00 264.00 271.00 264.40 294.00 294.00

HILL 46 305.00 305.00 308.00 308.00 302.00 298.00

HILL 46 296.00 282.00 286.00 282.00 287.00 285.10

HILL 46 286.60 283.00 283.90

HILL 47 279.00 279.00 290.00 282.00 282.00 282.00

HILL 47 282.00 282.00 276.00 246.10 262.00 265.00

HILL 47 236.00 266.00 253.00 236.80 248.10 260.60

HILL 47 278.00 281.10 290.20 294.00 286.00 281.80

HILL 47 280.80 282.00 279.30 269.90 268.00 252.00

HILL 47 252.00 258.30 264.10 325.00 325.00 325.00

HILL 47 323.20 331.90 341.00 341.00 341.00 328.00

HILL 47 325.90 320.00 326.00 320.00 299.00 283.00

HILL 47 260.10 253.10 253.00 289.00 281.00 281.00

HILL 47 269.00 280.00 283.00 283.00 263.60 294.00

HILL 47 293.00 294.00 305.00 296.00 296.00 266.00

HILL 47 266.00 270.00 265.70 274.50 276.20 279.40

HILL 47 275.00 278.00 286.00

HILL 48 279.00 288.00 282.00 282.00 282.00 282.00

HILL 48 282.00 282.00 267.00 236.00 264.00 271.00

HILL 48 278.00 265.00 262.00 272.00 272.00 261.30

HILL 48 272.20 280.00 286.50 290.10 291.10 289.50

HILL 48 286.50 284.80 282.00 275.00 257.00 252.00

HILL 48 265.00 257.10 323.00 323.00 309.00 320.10

HILL 48 327.60 329.90 341.00 341.00 305.80 321.00

HILL 48 327.00 326.00 305.40 298.00 283.00 275.00

HILL 48 283.00 252.00 257.00 287.00 289.00 273.00

HILL 48 275.70 274.00 281.90 285.00 275.20 288.70

HILL 48 294.00 294.00 294.00 294.00 294.00 240.10

HILL 48 264.00 265.70 264.30 273.10 273.70 275.40

HILL 48 269.10 273.20 277.50

HILL 49 279.00 282.00 282.00 282.00 279.00 277.40

HILL 49 282.00 266.00 252.00 268.00 252.00 265.00

HILL 49 265.00 258.00 265.00 273.00 275.00 278.00

HILL 49 271.00 276.90 277.00 283.90 284.10 282.90

HILL	49	286.00	277.00	283.00	283.00	252.00	260.00
HILL	49	259.80	295.00	294.00	323.00	323.00	341.00
HILL	49	346.00	346.00	335.00	332.00	302.80	310.40
HILL	49	324.00	325.00	300.40	294.00	284.00	305.00
HILL	49	284.00	283.00	290.00	290.00	295.00	278.00
HILL	49	282.30	276.30	281.10	279.10	286.30	287.10
HILL	49	284.30	294.00	294.00	294.00	253.00	254.00
HILL	49	266.00	266.00	265.00	268.60	262.40	277.00
HILL	49	269.00	277.00	271.50			
HILL	50	282.00	282.00	282.00	282.00	281.00	282.00
HILL	50	282.00	282.00	252.00	266.00	215.00	264.00
HILL	50	264.00	253.00	260.00	265.00	279.00	262.00
HILL	50	267.00	267.50	275.20	276.00	271.80	272.90
HILL	50	276.50	271.20	265.30	283.00	253.00	260.90
HILL	50	286.00	291.00	286.00	333.00	320.60	338.00
HILL	50	346.00	346.00	335.00	332.00	304.30	306.10
HILL	50	305.40	304.70	300.70	308.00	300.00	304.00
HILL	50	296.00	259.00	287.00	263.00	287.00	286.70
HILL	50	287.70	285.80	281.00	280.00	282.20	288.00
HILL	50	294.00	294.00	294.00	294.00	253.00	253.00
HILL	50	284.00	270.00	261.00	261.40	270.00	250.00
HILL	50	278.00	278.00	278.00			
HILL	51	282.00	282.00	282.00	282.00	271.00	282.00
HILL	51	282.00	282.00	282.00	211.90	263.00	264.00
HILL	51	264.00	257.80	260.50	265.00	271.00	261.00
HILL	51	268.10	267.80	272.90	275.00	274.00	270.00
HILL	51	276.00	271.00	271.00	251.50	255.20	262.10
HILL	51	272.10	287.80	331.00	329.00	330.00	337.00
HILL	51	346.00	330.90	333.00	320.60	316.00	322.00
HILL	51	299.00	307.00	307.00	308.00	304.00	243.00
HILL	51	241.00	285.00	284.00	281.00	279.00	288.00

HILL 51 292.30 296.00 276.50 282.00 274.80 279.00

HILL 51 286.00 294.00 294.00 284.00 284.00 281.00

HILL 51 284.00 285.00 286.00 271.00 240.90 240.00

HILL 51 238.60 260.00 259.60

HILL 52 282.00 282.00 273.00 282.00 274.00 273.00

HILL 52 274.00 244.70 254.00 266.00 262.00 264.00

HILL 52 264.00 259.60 259.00 266.00 271.00 255.50

HILL 52 264.00 269.00 276.00 289.00 289.00 288.00

HILL 52 282.00 274.00 278.00 285.00 265.70 291.00

HILL 52 291.00 284.70 331.00 316.50 328.60 337.00

HILL 52 337.00 336.80 337.00 343.00 332.00 323.00

HILL 52 327.00 327.00 275.80 269.80 261.10 265.00

HILL 52 237.00 265.00 263.70 273.40 278.90 293.60

HILL 52 294.50 295.00 296.00 296.00 282.00 280.00

HILL 52 286.00 238.00 285.00 285.00 284.00 279.00

HILL 52 275.60 278.00 262.60 280.00 260.00 267.00

HILL 52 276.00 279.00 263.30

HILL 53 282.00 282.00 274.00 265.00 274.00 274.00

HILL 53 274.00 253.90 274.00 267.00 262.00 262.00

HILL 53 257.70 264.00 267.00 267.00 284.00 258.00

HILL 53 292.00 284.00 287.00 276.30 282.10 285.00

HILL 53 282.00 284.00 282.00 283.70 283.00 271.90

HILL 53 320.00 325.00 325.00 324.40 321.80 332.00

HILL 53 342.00 339.30 342.80 346.00 328.60 332.00

HILL 53 332.00 330.00 327.00 271.00 268.00 265.00

HILL 53 258.00 257.30 279.00 282.60 302.00 300.10

HILL 53 291.50 293.00 295.00 294.00 278.00 278.00

HILL 53 279.00 279.00 285.00 285.00 284.00 276.40

HILL 53 283.30 276.60 281.00 285.00 291.00 259.90

HILL 53 268.20 275.00 295.00

HILL 54 282.00 266.00 266.00 255.10 260.80 268.90

HILL 54 274.00 274.00 281.00 246.80 260.80 268.00

HILL 54 260.70 267.00 266.10 270.00 287.00 290.00

HILL 54 285.00 270.80 278.60 285.00 287.20 285.40

HILL 54 285.00 280.90 269.00 283.00 285.00 276.00

HILL 54 281.00 325.00 325.00 319.00 320.00 346.00

HILL 54 344.00 342.10 338.90 346.00 332.00 332.00

HILL 54 305.00 327.00 332.00 265.00 252.00 268.00

HILL 54 278.00 278.00 272.10 283.40 295.70 302.60

HILL 54 295.00 293.00 292.00 275.00 275.00 264.00

HILL 54 260.00 262.00 284.00 283.00 283.00 283.00

HILL 54 290.00 287.00 285.00 272.20 291.00 291.00

HILL 54 278.00 280.60 293.70

HILL 55 215.30 265.00 263.00 265.00 262.00 257.60

HILL 55 278.00 280.00 281.00 252.00 265.00 267.90

HILL 55 275.00 262.10 265.30 264.00 284.00 289.00

HILL 55 276.00 279.30 286.10 285.30 285.60 281.00

HILL 55 285.00 283.00 269.00 287.00 284.30 286.00

HILL 55 281.70 287.10 302.00 299.80 311.50 346.00

HILL 55 344.20 342.60 343.00 346.00 346.00 295.90

HILL 55 306.00 332.00 332.00 252.00 271.00 270.00

HILL 55 262.20 277.00 280.10 287.10 291.90 296.90

HILL 55 290.30 284.30 284.00 280.00 275.00 254.10

HILL 55 262.00 278.00 282.00 282.00 282.00 279.10

HILL 55 282.60 281.20 278.60 284.40 286.00 284.60

HILL 55 279.70 285.90 303.20

HILL 56 226.10 237.80 248.10 261.70 266.20 274.00

HILL 56 276.70 279.90 276.00 274.00 259.00 266.30

HILL 56 265.90 272.00 272.00 271.00 270.00 293.00

HILL 56 289.00 284.00 286.00 290.00 287.70 288.00

HILL 56 285.00 283.20 281.10 287.00 287.00 290.00

HILL 56 292.70 299.00 297.80 324.00 321.70 333.00

HILL 56 333.10 331.00 345.00 339.00 291.70 305.00

HILL 56 306.00 305.00 287.00 272.00 264.00 280.00

HILL 56 269.50 278.20 287.20 287.80 287.00 289.00

HILL 56 291.40 289.60 289.00 275.00 277.00 269.00

HILL 56 258.00 278.00 278.00 278.00 276.00 275.40

HILL 56 274.10 271.40 270.50 277.40 280.20 287.20

HILL 56 286.80 311.00 309.20

HILL 57 218.20 262.00 269.00 268.00 273.10 278.60

HILL 57 284.10 281.00 276.60 272.00 268.00 268.10

HILL 57 269.80 276.00 267.60 274.00 246.10 289.00

HILL 57 293.00 289.00 286.00 278.60 292.00 291.00

HILL 57 289.00 288.20 286.60 284.60 292.00 289.00

HILL 57 287.80 302.00 301.10 321.00 321.00 318.80

HILL 57 334.00 326.00 309.50 303.00 306.00 293.00

HILL 57 286.80 281.90 285.60 284.00 277.00 288.00

HILL 57 276.00 283.10 288.90 289.00 281.10 287.00

HILL 57 284.10 288.80 283.90 271.90 269.00 242.00

HILL 57 269.00 278.00 275.00 274.00 273.00 278.00

HILL 57 284.00 285.00 275.00 287.00 286.60 286.50

HILL 57 288.90 305.00 307.00

HILL 58 233.40 244.50 257.10 268.40 278.80 285.40

HILL 58 285.00 279.30 277.60 276.00 266.90 263.80

HILL 58 265.00 273.00 273.00 273.00 269.00 288.00

HILL 58 283.00 288.00 293.00 295.00 295.00 290.40

HILL 58 293.30 293.00 288.60 288.00 285.30 282.00

HILL 58 292.00 285.30 293.00 305.00 312.00 305.10

HILL 58 305.80 305.50 316.00 300.20 296.00 294.00

HILL 58 289.80 282.20 283.20 288.00 292.00 290.00

HILL 58 277.50 288.10 287.40 288.00 284.00 274.40

HILL 58 287.00 280.00 273.40 277.00 270.00 272.00

HILL 58 272.00 278.00 274.00 273.00 277.00 278.00

HILL	58	282.00	278.00	282.00	277.50	292.00	286.10
HILL	58	287.90	295.50	308.70			
HILL	59	234.00	249.00	245.70	255.00	270.80	274.10
HILL	59	274.30	277.50	273.60	274.10	264.70	261.20
HILL	59	273.00	277.00	282.00	274.00	269.00	288.00
HILL	59	280.00	278.80	288.00	291.00	277.40	292.00
HILL	59	290.90	287.40	288.70	277.10	280.10	273.50
HILL	59	272.80	282.10	298.00	299.00	303.60	307.00
HILL	59	309.60	306.50	302.30	294.70	292.20	290.30
HILL	59	285.00	283.00	288.00	293.00	292.00	291.00
HILL	59	288.00	286.70	282.60	283.60	282.70	282.00
HILL	59	287.00	290.00	290.00	290.00	272.00	276.00
HILL	59	256.00	241.00	274.00	277.00	285.00	289.00
HILL	59	294.00	292.00	296.00	293.00	291.00	289.10
HILL	59	306.00	295.70	321.00			
HILL	60	237.00	223.60	233.90	272.00	271.00	258.90
HILL	60	270.00	273.80	275.00	265.70	260.90	265.60
HILL	60	270.30	279.80	281.50	276.80	278.00	284.00
HILL	60	279.10	286.90	277.50	284.00	293.00	296.00
HILL	60	296.00	282.00	289.00	303.00	294.00	296.00
HILL	60	274.60	281.50	293.40	308.00	308.00	306.00
HILL	60	306.00	294.10	297.60	295.10	289.90	281.10
HILL	60	292.00	289.00	297.00	292.00	285.40	293.00
HILL	60	294.00	287.80	286.50	276.90	282.50	285.50
HILL	60	279.80	278.00	288.00	288.00	281.00	281.00
HILL	60	248.00	248.00	250.00	285.00	285.00	288.00
HILL	60	290.00	295.00	294.00	289.40	295.90	299.50
HILL	60	302.30	305.20	311.10			
HILL	61	205.80	214.70	224.90	271.00	248.40	281.00
HILL	61	276.40	276.00	266.50	269.00	268.00	271.90
HILL	61	281.70	284.60	278.60	269.70	275.00	274.00

HILL 61 275.60 284.00 281.50 280.70 285.40 290.00

HILL 61 293.00 304.00 307.00 299.00 297.00 294.00

HILL 61 279.20 292.00 281.40 289.40 312.00 304.30

HILL 61 294.90 298.70 298.50 295.60 286.00 284.00

HILL 61 291.00 291.00 297.00 297.00 291.60 291.10

HILL 61 291.50 289.30 285.20 280.90 284.00 285.00

HILL 61 279.80 280.00 288.00 283.00 284.00 247.90

HILL 61 251.00 264.00 249.00 276.00 259.00 278.00

HILL 61 283.50 287.10 289.40 295.70 296.80 303.90

HILL 61 307.50 313.10 313.30

HILL 62 220.00 219.30 239.00 270.00 267.00 272.10

HILL 62 278.90 281.00 281.00 286.00 283.00 283.00

HILL 62 284.10 278.00 273.40 274.00 278.00 272.00

HILL 62 272.20 270.60 275.60 280.30 288.10 289.80

HILL 62 289.50 289.50 295.90 307.00 302.20 293.70

HILL 62 286.00 288.70 288.80 300.00 311.00 307.40

HILL 62 300.40 302.90 300.70 299.00 285.50 295.00

HILL 62 299.00 290.10 286.20 294.00 292.90 292.50

HILL 62 293.90 294.00 283.30 284.70 287.00 278.00

HILL 62 282.00 288.00 288.00 285.00 281.00 281.00

HILL 62 283.00 283.00 223.80 237.70 258.00 285.00

HILL 62 285.00 288.00 290.80 290.50 296.90 302.90

HILL 62 309.30 307.80 302.80

HILL 63 209.70 223.00 270.00 270.00 272.00 267.90

HILL 63 279.00 281.00 281.00 286.00 285.00 282.00

HILL 63 280.10 270.10 265.50 262.30 265.00 268.00

HILL 63 269.00 264.70 271.90 278.10 282.00 281.10

HILL 63 283.00 293.50 301.50 309.00 303.10 304.10

HILL 63 302.00 291.30 291.50 293.90 308.00 309.00

HILL 63 307.00 302.90 304.00 287.30 288.80 298.00

HILL 63 306.00 307.00 298.60 295.20 295.80 293.00

HILL	63	294.00	294.00	285.00	287.00	287.00	287.00
HILL	63	288.00	287.00	285.00	279.00	279.00	283.00
HILL	63	285.00	283.00	285.00	285.00	285.00	249.50
HILL	63	295.00	295.00	290.10	294.20	296.90	300.60
HILL	63	303.20	301.90	295.50			
HILL	64	201.00	198.20	276.00	279.00	272.00	268.00
HILL	64	279.00	281.00	283.00	285.00	286.00	285.00
HILL	64	279.00	272.40	268.90	261.10	250.80	261.00
HILL	64	265.00	265.00	270.00	274.00	281.00	279.10
HILL	64	292.00	288.60	298.30	322.00	313.90	310.10
HILL	64	307.40	294.90	297.70	297.30	301.00	302.30
HILL	64	302.80	311.00	311.00	285.10	295.00	309.00
HILL	64	314.10	313.60	299.90	297.40	297.00	286.00
HILL	64	294.00	298.00	296.00	292.00	291.00	281.00
HILL	64	278.00	268.00	285.00	274.70	284.10	285.00
HILL	64	285.00	285.00	285.00	285.00	285.00	284.00
HILL	64	295.00	295.00	289.40	296.00	298.60	297.80
HILL	64	303.10	301.20	291.60			
HILL	65	190.80	267.00	276.00	272.00	273.00	271.00
HILL	65	269.00	281.00	282.00	282.00	282.00	277.00
HILL	65	277.00	267.00	263.40	260.60	252.30	268.00
HILL	65	269.00	275.00	279.00	283.00	280.90	287.70
HILL	65	289.50	294.10	304.60	317.10	319.90	313.50
HILL	65	313.70	313.00	295.80	301.00	290.00	293.10
HILL	65	292.60	296.00	311.00	295.00	289.70	315.00
HILL	65	316.00	315.00	304.70	305.00	290.00	297.00
HILL	65	295.00	292.00	289.00	295.00	291.00	283.00
HILL	65	283.00	279.30	284.20	283.80	284.40	286.00
HILL	65	286.00	286.00	285.00	285.00	285.00	276.00
HILL	65	284.00	278.90	292.30	293.50	292.70	296.30
HILL	65	298.30	302.00	302.00			

HILL 66 192.00 182.00 262.00 273.00 273.00 271.00

HILL 66 271.00 281.00 234.00 231.00 270.00 270.00

HILL 66 266.20 269.00 265.00 265.00 259.20 270.60

HILL 66 271.10 275.80 278.00 282.00 289.00 285.80

HILL 66 292.00 300.00 304.40 327.00 324.20 317.60

HILL 66 312.60 304.50 305.00 287.50 280.90 297.00

HILL 66 290.60 296.00 296.00 295.00 291.00 316.00

HILL 66 316.00 316.00 294.90 293.00 298.00 295.00

HILL 66 295.10 293.40 290.00 298.00 283.00 279.50

HILL 66 280.00 282.10 282.30 279.00 286.00 288.00

HILL 66 288.00 287.00 285.00 268.90 283.00 284.00

HILL 66 277.60 286.00 292.00 289.00 288.00 299.00

HILL 66 292.20 303.00 277.00

HILL 67 179.90 171.00 263.00 273.00 272.00 272.00

HILL 67 271.00 271.00 270.00 270.00 270.00 270.00

HILL 67 268.30 268.70 276.00 276.00 284.00 279.60

HILL 67 280.50 281.60 282.90 276.50 292.00 282.00

HILL 67 289.20 293.00 318.00 315.80 316.00 317.60

HILL 67 308.60 306.00 288.10 283.30 297.00 297.00

HILL 67 290.00 288.00 290.00 277.00 279.00 263.00

HILL 67 315.00 286.40 288.10 291.30 300.00 295.50

HILL 67 294.00 292.30 293.00 294.00 275.00 282.10

HILL 67 280.20 283.00 280.00 282.00 287.00 288.00

HILL 67 288.00 285.00 264.00 283.00 282.00 267.00

HILL 67 266.70 262.10 289.00 289.00 281.00 298.00

HILL 67 300.00 300.00 274.90

HILL 68 183.00 164.50 269.00 269.00 269.00 271.00

HILL 68 269.00 269.00 242.00 237.00 266.00 268.00

HILL 68 268.00 271.00 275.70 277.00 270.70 284.00

HILL 68 286.20 297.00 291.40 284.00 293.00 292.00

HILL 68 292.30 294.20 312.00 316.10 314.90 324.00

HILL 68 307.20 294.60 286.10 286.00 281.00 285.00

HILL 68 289.20 295.00 296.00 297.00 296.00 279.00

HILL 68 297.00 290.30 293.60 290.90 295.20 294.30

HILL 68 288.50 297.00 294.00 291.00 280.00 277.50

HILL 68 279.90 283.80 274.50 278.00 282.00 282.00

HILL 68 284.00 228.80 244.00 283.00 245.20 259.00

HILL 68 252.80 261.70 263.90 282.00 281.80 295.00

HILL 68 300.00 300.00 274.00

HILL 69 269.00 269.00 269.00 269.00 269.00 269.00

HILL 69 269.00 269.00 241.00 233.80 259.00 270.00

HILL 69 257.90 271.00 277.80 280.00 286.00 290.50

HILL 69 291.20 306.00 300.00 290.70 293.00 292.10

HILL 69 303.00 295.30 312.00 311.10 307.80 305.10

HILL 69 301.80 292.80 303.00 303.00 283.00 281.60

HILL 69 290.20 295.00 294.90 292.00 292.00 286.00

HILL 69 280.80 295.00 296.00 293.00 299.00 294.00

HILL 69 288.80 293.00 278.00 279.00 270.00 276.10

HILL 69 279.10 280.30 277.00 271.10 273.30 276.00

HILL 69 276.00 281.00 273.00 291.00 299.00 299.00

HILL 69 299.00 299.00 282.00 286.00 284.70 292.00

HILL 69 300.00 274.90 267.80

HILL 70 228.00 228.00 269.00 269.00 269.00 269.00

HILL 70 269.00 261.00 253.00 254.00 272.00 269.00

HILL 70 263.70 269.00 274.00 272.70 288.00 282.80

HILL 70 288.40 302.20 299.30 295.90 293.90 301.60

HILL 70 308.60 305.40 302.30 310.60 307.90 306.60

HILL 70 308.00 308.00 303.00 303.00 303.00 289.00

HILL 70 287.90 299.00 293.20 286.50 289.00 286.00

HILL 70 286.00 286.00 286.00 291.00 278.00 293.00

HILL 70 294.00 291.00 289.00 283.00 283.00 281.00

HILL 70 276.00 271.10 264.10 268.30 274.00 276.00

HILL 70 285.00 276.00 283.00 299.00 299.00 299.00

HILL 70 299.00 279.00 299.00 286.00 286.00 299.00

HILL 70 276.00 276.00 263.00

HILL 71 228.00 228.00 217.00 269.00 269.00 266.00

HILL 71 259.10 258.40 250.00 261.00 271.00 239.10

HILL 71 270.00 273.00 271.00 269.40 270.10 273.70

HILL 71 283.90 289.10 296.30 295.10 297.80 304.60

HILL 71 310.70 313.30 304.40 308.50 302.70 300.50

HILL 71 302.90 307.00 308.00 303.00 291.00 291.00

HILL 71 297.00 296.10 291.70 293.00 294.00 286.00

HILL 71 286.00 286.00 283.00 296.00 294.00 279.30

HILL 71 286.40 282.60 279.90 286.00 286.00 275.00

HILL 71 271.00 257.80 266.00 266.00 268.00 292.00

HILL 71 285.00 275.90 283.00 299.00 299.00 299.00

HILL 71 299.00 276.60 270.00 252.00 286.00 286.00

HILL 71 263.00 275.00 267.00

HILL 72 228.00 228.00 269.00 269.00 269.00 260.50

HILL 72 269.00 269.00 261.00 236.00 277.00 281.00

HILL 72 281.00 281.00 269.00 268.50 272.80 276.90

HILL 72 290.80 285.00 293.60 288.80 292.00 304.40

HILL 72 306.20 312.00 304.10 296.00 297.80 298.00

HILL 72 294.70 290.70 292.00 293.00 249.00 296.00

HILL 72 294.00 289.00 290.10 289.50 293.00 286.00

HILL 72 286.00 296.00 296.00 295.00 292.50 290.50

HILL 72 282.60 283.20 291.00 281.90 284.00 276.50

HILL 72 271.60 271.00 271.00 281.00 270.00 292.00

HILL 72 284.20 282.00 288.00 297.00 286.00 290.50

HILL 72 299.00 286.00 269.10 271.00 271.00 275.00

HILL 72 275.00 266.40 275.00

HILL 73 196.70 228.00 269.00 269.00 265.00 264.00

HILL 73 269.00 269.00 269.00 236.00 281.00 281.00

HILL	73	281.00	269.00	281.00	275.90	272.00	297.00
HILL	73	294.20	296.90	292.50	292.00	296.80	304.60
HILL	73	304.70	305.80	302.00	290.70	295.00	295.00
HILL	73	288.80	285.90	282.00	292.00	295.00	296.00
HILL	73	296.00	296.00	293.00	282.40	290.00	294.00
HILL	73	290.00	291.00	291.00	291.00	287.70	292.00
HILL	73	278.30	278.30	289.00	287.00	278.80	284.00
HILL	73	284.00	266.00	281.00	281.00	275.30	288.90
HILL	73	288.30	283.10	293.00	262.00	274.00	289.00
HILL	73	289.00	276.60	277.00	276.00	247.70	260.00
HILL	73	253.90	269.00	266.00			
HILL	74	187.40	265.00	269.00	265.00	265.00	265.00
HILL	74	269.00	269.00	269.00	275.00	281.00	277.00
HILL	74	277.00	275.00	277.70	272.40	270.30	283.10
HILL	74	295.20	292.30	287.00	277.40	292.70	305.40
HILL	74	302.50	309.00	315.00	283.30	282.70	276.20
HILL	74	276.90	279.10	286.00	287.00	241.90	296.00
HILL	74	295.00	282.80	296.00	296.00	294.00	290.00
HILL	74	288.00	284.00	283.30	287.10	277.90	290.00
HILL	74	282.00	290.70	279.80	286.80	282.00	284.00
HILL	74	269.00	277.00	263.00	273.70	278.50	288.80
HILL	74	293.00	290.00	294.00	277.00	271.40	279.30
HILL	74	286.10	288.00	268.00	278.00	278.00	278.00
HILL	74	252.80	251.50	247.30			
HILL	75	271.00	269.00	265.00	265.00	265.00	269.00
HILL	75	269.00	269.00	269.00	281.00	267.00	268.00
HILL	75	257.30	268.00	270.50	270.00	273.90	286.00
HILL	75	279.00	299.00	272.60	287.80	298.50	305.50
HILL	75	299.10	307.00	313.00	282.90	285.00	283.50
HILL	75	281.00	285.00	285.00	287.00	296.00	287.00
HILL	75	285.00	280.70	286.00	296.00	293.00	290.00

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        HILL  75  286.00  292.00  287.30  274.50  288.00  282.00
        HILL  75  274.00  278.00  270.60  266.10  271.00  294.00
        HILL  75  294.00  286.00  294.00  286.00  272.00  287.00
        HILL  75  272.20  279.00  270.20  276.20  278.00  278.00
        HILL  75  274.00  254.00  238.40
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** DESCRREC "Resident" ""
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  DISCCART   418543.06  6246615.35  269.56  283.00
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  DISCCART   416652.74  6248751.74  193.00  287.00
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** Percentile/Rolling Average
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****

** Project Parameters

****

** PROJCTN CoordinateSystemUTM

** DESCPTN UTM: Universal Transverse Mercator

** DATUM   World Geodetic System 1984

** DTMRGN   Global Definition

** UNITS   m

** ZONE   -50

** ZONEINX 0

**

Appendix B – Emission estimation

Emissions – operational phase

Site specific data used in emission estimation is shown in Table 1.

Table 1 Site specific information

Activity	Amount	Unit	Comments
Number of haul truck trips per year (ore)	112,203	Trips/year	Calculated; accounted for return trip
Number of haul truck trips per year (waste)	54,566	Trips/year	Calculated; accounted for return trip
Dozers	43,800	Hours	Based on 5 dozers operating at the pit and WRL 24/7
Drilling	91,250	Drills/year	Based on 250 drill-downs per day, every day of the year
Excavator	271	t/hour	Based on 9.5 Mtpa mined, spilt between four excavators.
Rockbreaker	361	t/hour	Based on 9.5 Mtpa mined, spilt between three rockbreakers.
Haul trucks to WRL	520	t/hour	Based on 4.62 Mtpa to the WRL
Haul trucks to processing plant	1,084	t/hour	Based on 9.5 Mtpa to the WRL

Table 2 Number of ancillary equipment

Equipment type	Quantity
Atlas D5 drills	7
200t excavators	4
CAT D785 mining trucks	26
Dozers at pits	2
Dozers at WRL	3
ROM Loaders	4
Rockbreakers	3
Haul trucks to WRL	7
Haul trucks to processing plant	19

Table 3 Wheel generated dust factors for haul trucks

Variable	Pit to Processing Plant	Pit to Waste Rock
Hourly haul rate (t/hr)	1084	520
Return distance (km)	2	1.8
Truck payload (t)	84.7	84.7
Truck trips	12.8	6.1
VKT (km/hour) (total)	25.6	10.9
VKT per truck (km/hour)	1.3	1.6

Table 5 Wind erosion source areas

Stockpile source	Area (m^2)
Fine ore stockpile	400

Final product stockpile	400
ROM stockpile1	400
ROM stockpile1	400
Pits	25,000
WRL	81,000
TSF 1	65,000
TSF 2	26,000
TSF 4	100,000

References to the Emission calculations for the sources shown in Table 2 were estimated using the NPI equations detailed below.

Table 4 NPI Emission factors used for calculating emission rates [1]

Activity	Emission factor (no control)		Reference
	TSP	PM_{10}	
Blasting (kg/blast/hour)	55.7	28.8	NPI EET Manual for Mining v3.1, default emission factor Table 2
Drilling (kg/hole/hour)	0.59	0.31	NPI EET Manual for Mining v3.1, Table 2 Default emission factor
Excavators/loaders (kg/t/hour)	0.025	0.012	NPI EET Manual for Mining v3.1, Table 2, Default emission factor
Rockbreakers (kg/t/hour)	0.025	0.012	NPI EET Manual for Mining v3.1, Table 2, default emission factor (as Excavators/Shovels/Front-end loaders)
Dozers at pits (kg/hour/hour)	17.0	4.1	NPI EET Manual for Mining v3.1, Table 2 default emission factor
Dozers at WRL (kg/hour/hour)	17.0	4.1	NPI EET Manual for Mining v3.1, Table 2, default emission factor
Crushing (Primary) (kg/t/hour)	0.20	0.02	NPI EET Manual for Mining v3.1, Table 3, default emission factor
Unloading/loading ore stockpiles (kg/t/hour)	0.004	0.0017	NPI EET Manual for Mining v3.1, Table 2, default emission factor
Wind erosion (kg/ha/hour)	0.4	0.2	NPI EET Manual for Mining v3.1, Table 2, default emission factor
Wheel generated dust from unpaved roads at industrial sites (to processing plant)	4.23	1.25	NPI EET Manual for Mining v3.1, Table 2, default emission factor

1 Note only control emission factors were used for this assessment

Table 5 NPI controls and emission reduction

Control	Emission reduction (TSP and PM10)
Enclosure	0.1
Hooding with fabric filters	0.17
Hooding with scrubbers	0.25
Level 1 watering (2L/m2/h), wind breaks	0.5
Rock armour/ topsoil applied,	0.7
Telescopic chute with water sprays,	0.25
Vegetation established	0.6
Water spray (50%)	0.5
Water sprays (70%)	0.3
Water sprays with chemicals	0.1

Wind breaks	0.7

Appendix C - Source characteristics

Source ID	Description	Easting	Northing	Sigma Y	Sigma Z	Release height
1	Blasting	413702	6252672	1.2	0.5	1
2	Drill 1	413702	6252672	1.2	0.5	1
3	Drill 2	413598	6252962	1.2	0.5	1
4	Drill 3	413417	6253175	1.2	0.5	1
5	Drill 4	413488	6253092	1.2	0.5	1
6	Drill 5	413587	6253071	1.2	0.5	1
7	Drill 6	413596	6253169	1.2	0.5	1
8	Drill 7	413530	6253234	1.2	0.5	1
9	Excavators	413103	6253097	0.7	0.5	1
10	Excavators	413897	6252834	0.7	0.5	1
11	Excavators	413541	6252417	0.7	0.5	1
12	Excavators	414209	6251837	0.7	0.5	1
13	Loaders	413103	6253097	0.7	0.5	1
14	Loaders	413897	6252834	0.7	0.5	1
15	Loaders	413541	6252417	0.7	0.5	1
16	Loaders	414209	6251837	1.3	0.5	1
17	Rockbreakers	414250	6251978	0.7	0.5	1
18	Rockbreakers	413973	6252620	1.3	0.5	1
19	Rockbreakers	412987	6252210	1.3	0.5	1
20	Conveyor transfer point 1	413104	6252020	0.4	0.9	2
21	Conveyor transfer point 2	412404	6252262	0.4	0.9	3
22	3 stage crusher (for CPG 1 & CPG2)	412692	6252971	4.3	1.2	2.5
23	2 stage crushing (for CPG3 & CPG 4)	412123	6252207	4.3	1.2	2.5
24	ROM stockpile (for TIL, CPG1 & CPG2)	412928	6253174	0.7	0.5	1
25	Fine ore stockpile - CPG3 & CPG 4	413048	6252252	0.7	0.5	1

Source ID	Description	Easting	Northing	Sigma Y	Sigma Z	Release height
26	Final Product Stockpile - CPG3 & CPG 4	411964	6251901	0.7	0.5	1
27	ROM stockpile (for CPG3 & CPG4)	411649	6251575	0.7	0.5	1
28	Dozer - pits	413636	6253298	0.7	0.5	1
29	Dozer - pits	414185	6251979	0.7	0.5	1
30	Dozer - waste	414784	6253373	0.7	0.5	1
31	Dozer - waste	415171	6252015	0.7	0.5	1
32	Dozer - waste	414428	6250782	0.7	0.5	1
33	Haultruck1 - north end to waste dump	415031	6253549	0.4	0.5	1
34	Haultruck2 - north end to waste dump	414704	6253963	0.4	0.5	1
35	Haultruck3 - north end to waste dump	414100	6253671	0.4	0.5	1
36	Haultruck4 - north end to waste dump	413954	6253554	0.4	0.5	1
37	Haultruck5 - north end to waste dump	414271	6253468	0.4	0.5	1
38	Haultruck6 - north end to waste dump	414070	6253379	0.4	0.5	1
39	Haultruck7 - north end to waste dump	413517	6253705	0.4	0.5	1
40	Haultruck8 - south end to processing facility	412497	6253262	0.4	0.5	1
41	Haultruck9 - south end to processing facility	412480	6252874	0.4	0.5	1
42	Haultruck10 - south end to processing facility	412506	6252553	0.4	0.5	1
43	Haultruck11 - south end to processing facility	412883	6252727	0.4	0.5	1
44	Haultruck12 - south end to processing facility	412357	6251781	0.4	0.5	1

Source ID	Description	Easting	Northing	Sigma Y	Sigma Z	Release height
45	Haultruck13 - south end to processing facility	412106	6251292	0.4	0.5	1
46	Haultruck14 - south end to processing facility	412704	6250747	0.4	0.5	1
47	Haultruck15 - south end to processing facility	412696	6251466	0.4	0.5	1
48	Haultruck16 - south end to processing facility	413021	6251924	0.4	0.5	1
49	Haultruck17 - south end to processing facility	413139	6252398	0.4	0.5	1
50	Haultruck18 - south end to processing facility	413405	6252114	0.4	0.5	1
51	Haultruck19 - south end to processing facility	413676	6251863	0.4	0.5	1
52	Haultruck20 - south end to processing facility	413872	6251792	0.4	0.5	1
53	Haultruck21 - south end to processing facility	413916	6251316	0.4	0.5	1
54	Haultruck22 - south end to processing facility	413901	6250863	0.4	0.5	1
55	Haultruck23 - south end to processing facility	413901	6250863	0.4	0.5	1
56	Haultruck24 - south end to processing facility	414522	6251639	0.4	0.5	1
57	Haultruck25 - south end to processing facility	414502	6252041	0.4	0.5	1
58	Haultruck26 - south end to processing facility	414324	6252377	0.4	0.5	1

Source ID	Description	Easting	Northing	Sigma Y	Sigma Z	Release height
59	WE - ROM stockpile	412928	6253174	1.2	1.2	2.5
60	WE - ROM stockpile	413048	6252252	1.2	1.2	2.5
61	WE - Fine ore stockpile	411964	6251901	1.2	1.2	2.5
62	WE - Final Product Stockpile	411649	6251575	1.2	1.2	2.5
63	WE - Pits1	414129	6252029	46.5	0.1	0.5
64	WE - Pits2	413165	6252893	46.5	0.1	0.5
65	WE - Pits3	413738	6252728	46.5	0.1	0.5
66	WE -Waste dump	415171	6252015	209.3	0.5	0.5
67	WE - TSF1-1	413229	6250880	93.0	0.1	0.5
68	WE - TSF1-2	413519	6251490	93.0	0.1	0.5
69	WE - TSF4-2	412668	6250295	93.0	0.1	0.5
70	WE - TSF4-1	414058	6250269	93.0	0.1	0.5

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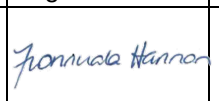
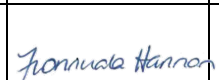
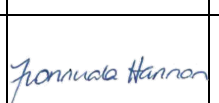
Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Draft A	A Sala Tenna G Formentin	J Forrest A Callegari	On file	F Hannon		12/6/2018
Draft B	A Sala Tenna G Formentin	J Forrest A Callegari	On file	F Hannon		25/6/2018
Rev 0	A Sala Tenna G Formentin	J Forrest A Callegari	On file	F Hannon		26/6/2018
R1	A Sala Tenna G Formentin	A Callegari	On file	F Hannon		16/07/2018
R2	A Sala Tenna G Formentin	J Forrest	On file	F Hannon		18/07/2018
R3	A Sala Tenna G Formentin	M Asimakis	On file	F Hannon		5/10/2018
R4	A Sala Tenna	J Forrest	On file	F Hannon		7/12/2018

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