

On-Site Meteorological Stations

In addition to the State meteorological stations, on-site weather stations have been utilised to gather site-specific data.

The first on-site weather station (model Capricorn Columbia weather station, CCWS), was installed in 2009 at the exploration camp. The location of this installation is shown in Figure 4.2.1 (see Volume 5). The CCWS was approximately 4 km from the Erato open pit, however it was subject to suspected lightning strike which caused technical problems during the downloading of data. As a result there is an incomplete dataset from this source.

The CCWS station was replaced by two on-site Campbell scientific weather stations. Both were installed in May 2011. The first was located next to the Tigranes open pit, which was moved to the exploration camp in winter of that year. The second station was placed approximately 2 km east of the WDF. After 3 months, in July 2011, the station was moved to the location of the WDF. Later in September 2011, it was moved to approximately 4km north of Gorayk for a period of two months as this was the preferred site for the heap leach facility at that time. During the winter the station was moved to Gorayk village. These locations are also shown in Figure 4.2.1 (see Volume 5).

The data from the onsite weather station has been analysed to cover the period May 2011 – October 2011 and October 2012 to May 2013. A complete year of the full suite of site-specific weather data was not available at the time of writing due to the technical difficulties in maintaining the weather stations during winter snowfall. The two periods of data have been shown to provide a representation of typical summer and winter months for the period monitored. The analysis used for the baseline has been taken from data obtained at the open pit, due to the higher elevation compared to the state met station. Further data collection is ongoing and will be used to maintain records during the construction and operational phase of the Project.

Figure 4.2.6 and Figure 4.2.7 identifies the precipitation and temperature data collected at the open pit, with temperature data only in 2012/13.

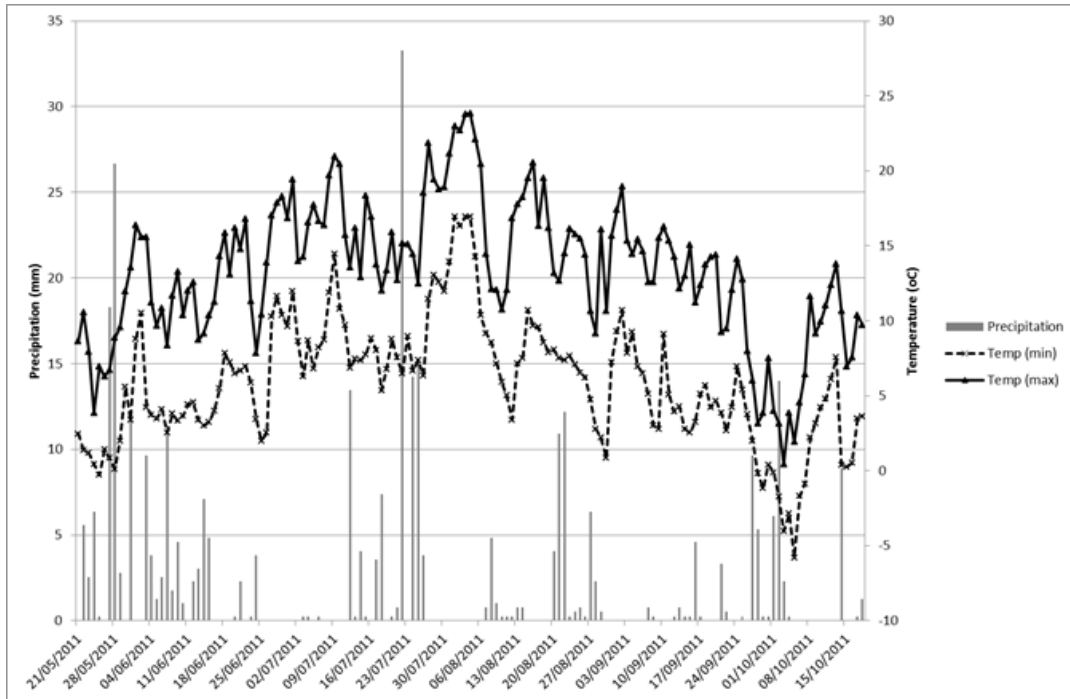


Figure 4-1: Rainfall and Temperature Data from On-Site Weather Station (2011)

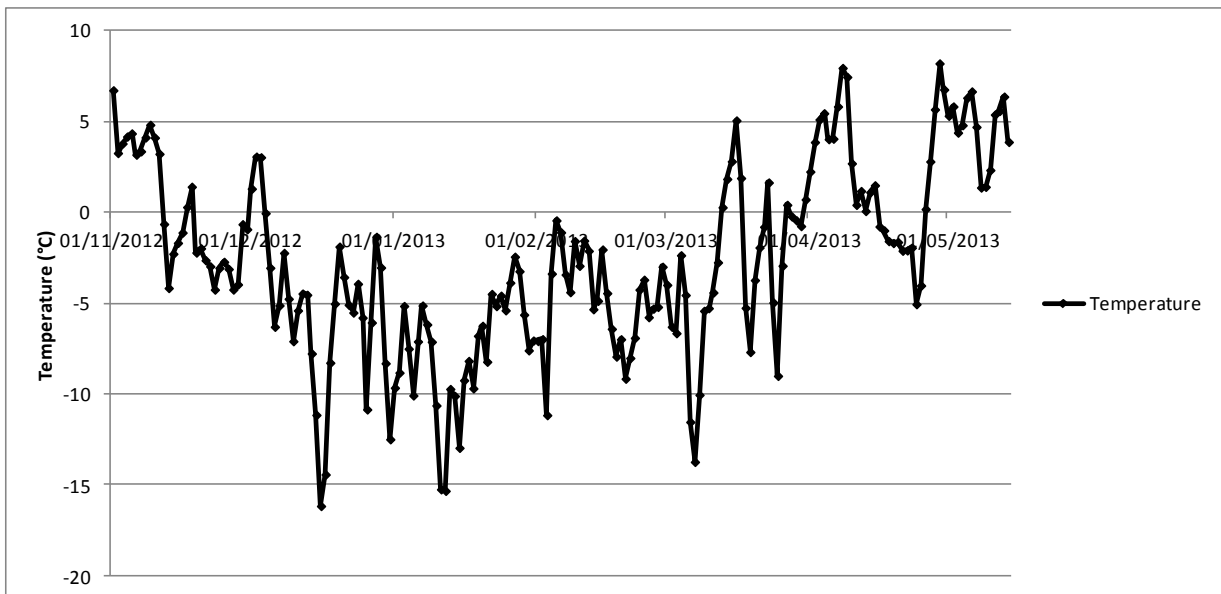


Figure 4-2: Temperature Data from On-Site Weather Station (2012/13)

Temperatures during the study period reached a maximum of 24°C and a minimum of -17°C. The peak rainfall occurred on 22nd July 2011, with 33.2 mm of rainfall. Rainfall was not recorded during winter months, as majority was snow fall.

The wind speed and direction measurements were recorded as hourly means. Wind speed is shown in Figure 4.2.8 and Figure 4.2.9, as a frequency plot, and illustrates that for the data

collected on-site, wind direction varies but comes predominantly from the east and west . The data from the onsite weather station to date provides a 5 month window for the analysis of the wind data and is therefore not reliable for the purpose of assessing long terms impacts, required for predicting impacts. Therefore, the wind data from the Vorotan Pass meteorological station have been used to assess air quality impacts, as this is more representative of the long term climate data for the area.

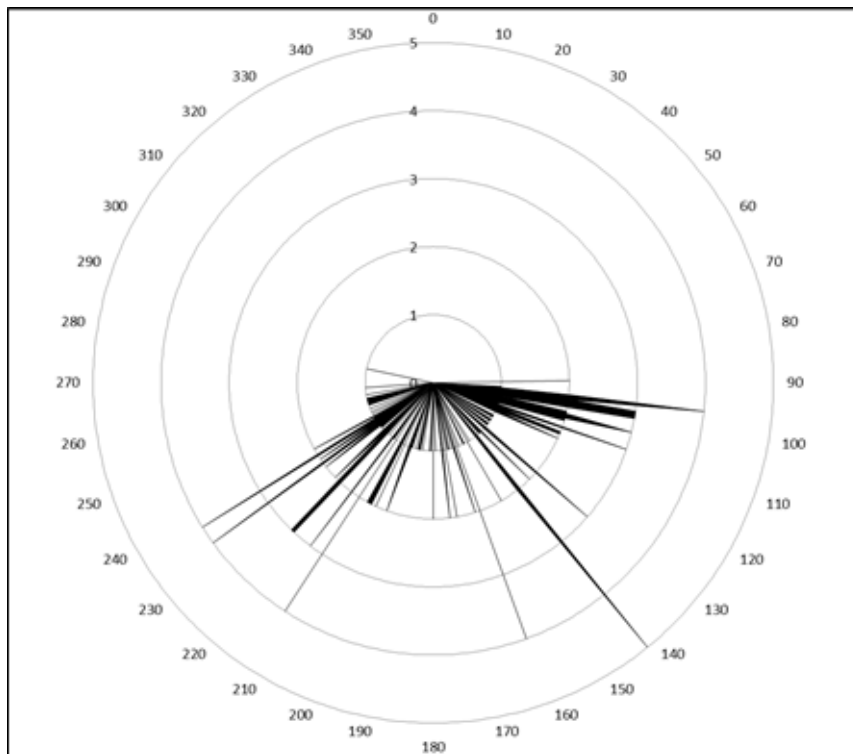


Figure 4-3: Composite Daily Average Wind Direction from all On-Site Data Monitoring Points (May to October 2011)

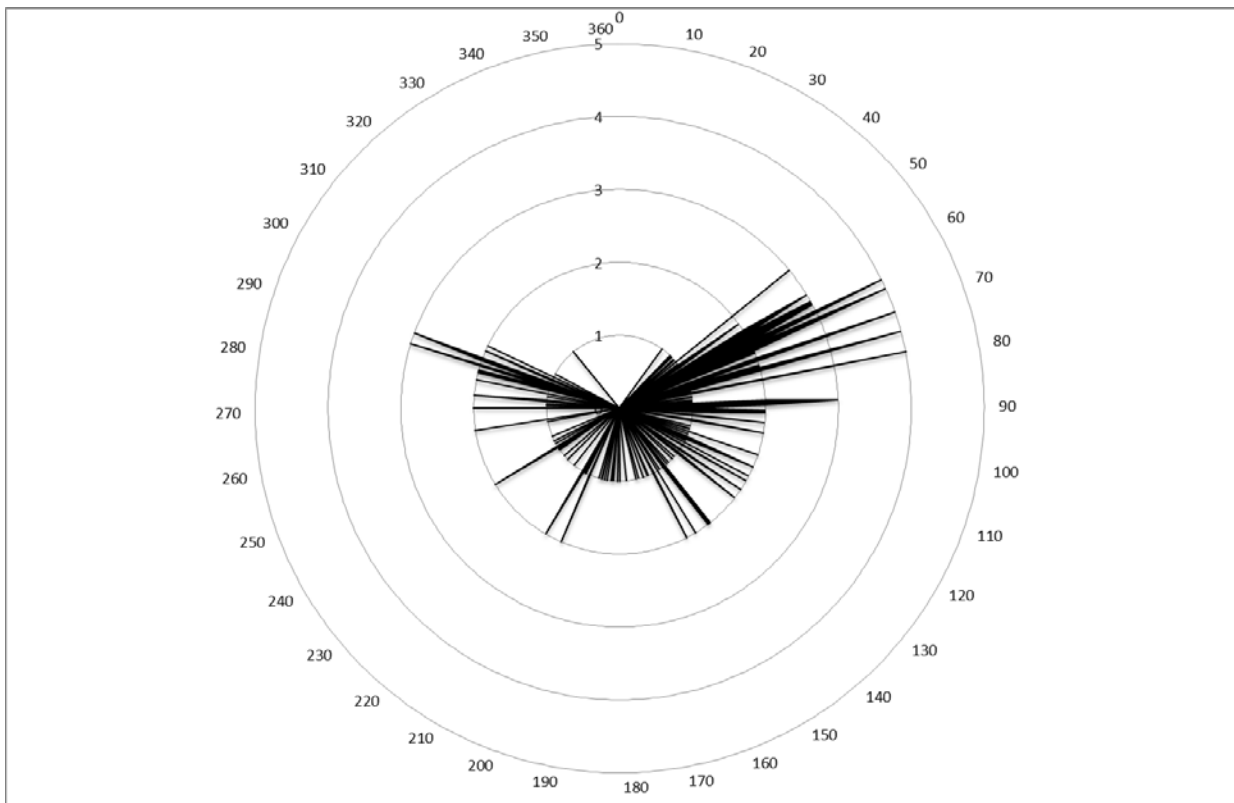


Figure 4-4: Composite Daily Average Wind Direction from On-Site Data Monitoring Points (October to May 2012/13)

The analysis of wind speed, within the Project is shown in Figure 4.2.10. The data illustrates that, over the monitoring period, wind speeds at the open pit were generally between 3m/s and 7m/s, with a peak of 15m/s in October. At a lower elevation, over a relatively short time period (22/09/2011 to 18/10/2011) gave lower wind speeds of between 1m/s and 5m/s, typical of autumnal weather patterns (see Figure 4.2.10). Winter months had fewer peaks of wind speed, compared to summer months, with average between 4m/s and 6m/s (see Figure 4.2.11).

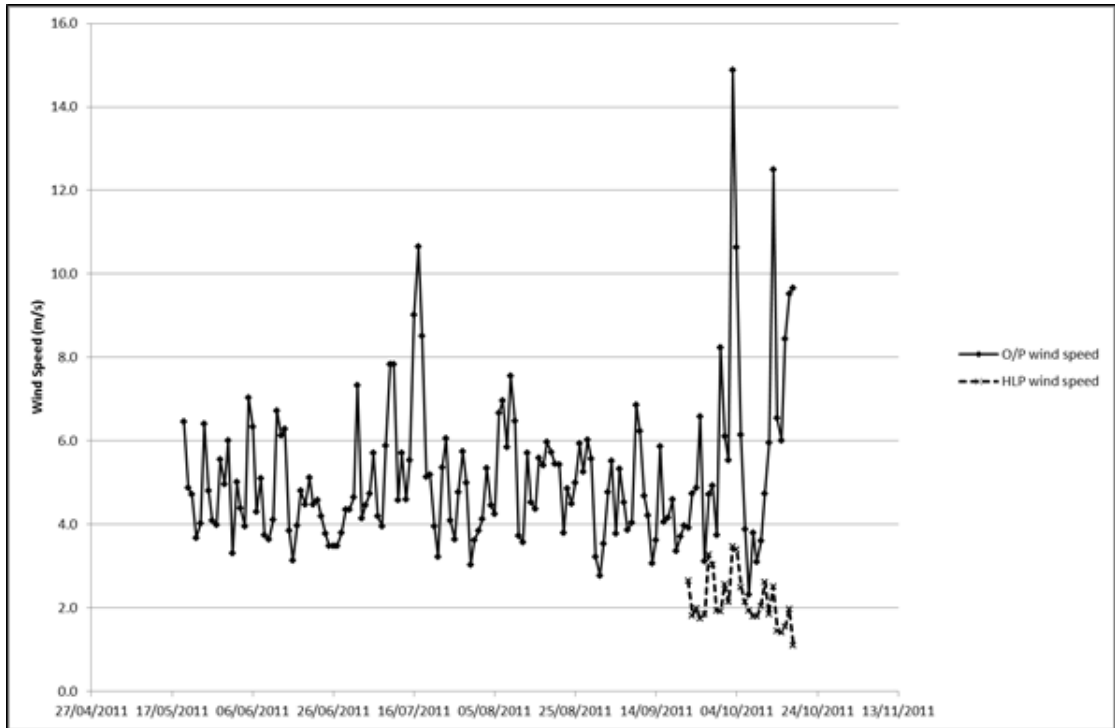


Figure 4-5: Wind Speed from On-Site Data (May to October 2011)

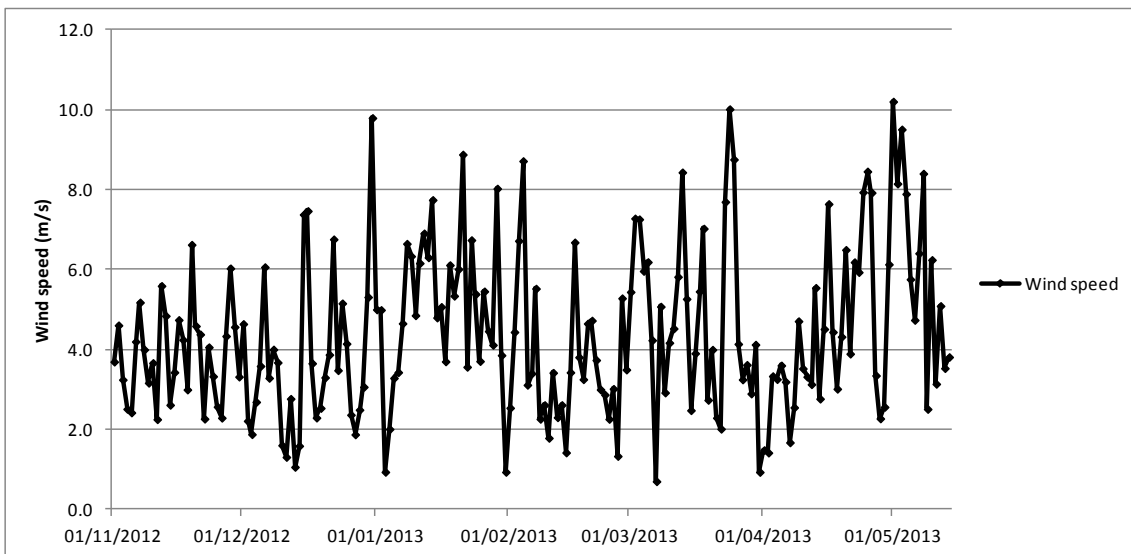


Figure 4-6: Wind Speed from On-Site Data (October to May 2012/13)