**Sensor Research**

**PMS7003 -** which detects particulate matter in the air which can detect particles of size PM10, PM2.5, PM1 and PM0.3. The PM5003 was rejected as it is too large to be considered for a wearable device. The ENS160 is smaller than the chosen sensor but only measured PM10 and PM2.5.

**BME680 -** senses VOCs (volatile total compounds) which contribute to air quality. The reviews for this were consistently high across a number of different websites. The SGP30 was also considered however the response time is 2s whereas the BME680 is 1s.

**Air530 –** location tracker which has low power usage and a good update rate between 1 and 10Hz. The Adafruit Ultimate GPS was a strong competitor with slightly lower power usage and the position accuracy was higher, however was over twice the price of the Air530. In an effort to keep the cost down the Air530 was chosen as it still provided a high tracking sensitivity and plenty of supporting documents.

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| **Hardware Purchased** | **Price (excluding shipping & VAT)** |
| PMS7003 | 23.05 |
| BME680 | 21.77 |
| Air530 | 12.56 |
| Pi Zero 2 W | 19.58 |
| Vibrating mini motor disc | 1.96 |
| 575 ultimate resistor kit | 6.91 |
| Full size breadboard | 5.76 |
| LDR 5 pack | 2.30 |
| Female/male jumper wires | 1.96 |
| Female/female jumper wires | 1.96 |
| Male/male jumper wires | 1.96 |

**Total:** €99.77