

Appendix 12.4: Air Quality Assessment Results

Air pollutant concentrations have been modelled at the existing and proposed sensitive receptor locations, for the 2018 Verification and Base Year, 2026 Opening Year and 2033 Future Year as detailed in Table 12.19 below.

In line with relevant guidance from the IAQM, results of a no-improvement sensitivity analysis are presented in Table 12.20 below. The sensitivity analysis considers NO_x and NO₂ only.

Table 12.19: Annual Mean NO_x, NO₂*, PM₁₀ and PM_{2.5}: Scenarios 1 – 5 (µg/m³)

| Receptor | Scenario 1: 2018 Base Year | | | | Scenario 2: 2026 Opening Year 'Without Development' | | | | Scenario 3: 2026 Opening Year 'With Development' | | | | Scenario 4: 2033 Future Year 'Without Development' | | | | Scenario 5: 2033 Future Year 'With Development' | | | |
|----------|-------------------------------|-----------------|------------------|-------------------|---|-----------------|------------------|-------------------|--|-----------------|------------------|-------------------|--|-----------------|------------------|-------------------|---|-----------------|------------------|-------------------|
| | NO _x | NO ₂ | PM ₁₀ | PM _{2.5} | NO _x | NO ₂ | PM ₁₀ | PM _{2.5} | NO _x | NO ₂ | PM ₁₀ | PM _{2.5} | NO _x | NO ₂ | PM ₁₀ | PM _{2.5} | NO _x | NO ₂ | PM ₁₀ | PM _{2.5} |
| ESR 1 | 35.05 | 22.29 | 12.69 | 7.92 | 21.89 | 14.61 | 11.77 | 7.16 | 26.84 | 17.21 | 12.41 | 7.53 | 18.59 | 12.60 | 11.82 | 7.18 | 25.89 | 16.41 | 13.44 | 8.08 |
| ESR 2 | 33.92 | 21.71 | 12.54 | 7.84 | 21.34 | 14.31 | 11.62 | 7.08 | 23.31 | 15.35 | 11.95 | 7.27 | 18.19 | 12.39 | 11.66 | 7.09 | 19.10 | 12.87 | 11.82 | 7.18 |
| ESR 3 | 53.68 | 31.51 | 13.46 | 8.53 | 30.77 | 19.24 | 12.52 | 7.70 | 32.00 | 19.87 | 12.71 | 7.80 | 25.12 | 16.02 | 12.64 | 7.74 | 23.27 | 15.06 | 12.21 | 7.50 |
| ESR 4 | 49.33 | 29.42 | 13.13 | 8.33 | 28.57 | 18.11 | 12.18 | 7.51 | 30.88 | 19.30 | 12.53 | 7.70 | 23.89 | 15.38 | 12.34 | 7.57 | 21.70 | 14.24 | 11.84 | 7.30 |
| ESR 5 | 53.97 | 31.65 | 14.89 | 9.22 | 30.34 | 19.02 | 13.86 | 8.31 | 30.71 | 19.21 | 13.86 | 8.31 | 24.07 | 15.48 | 13.90 | 8.32 | 24.05 | 15.47 | 13.80 | 8.26 |
| ESR 6 | 69.95 | 38.97 | 15.70 | 9.78 | 37.62 | 22.69 | 14.61 | 8.78 | 37.88 | 22.82 | 14.63 | 8.79 | 28.88 | 17.94 | 14.66 | 8.79 | 28.77 | 17.88 | 14.57 | 8.74 |
| ESR 7 | 41.78 | 25.71 | 14.56 | 8.94 | 25.04 | 16.27 | 13.61 | 8.11 | 25.36 | 16.44 | 13.67 | 8.15 | 20.61 | 13.67 | 13.65 | 8.12 | 19.58 | 13.13 | 13.34 | 7.95 |
| ESR 8 | 56.05 | 32.63 | 15.55 | 9.61 | 31.44 | 19.58 | 14.53 | 8.71 | 31.87 | 19.80 | 14.61 | 8.75 | 25.16 | 16.04 | 14.62 | 8.74 | 25.88 | 16.41 | 14.79 | 8.84 |
| ESR 9 | 46.07 | 27.84 | 12.63 | 8.15 | 27.31 | 17.46 | 11.70 | 7.35 | 27.64 | 17.63 | 11.76 | 7.38 | 22.42 | 14.62 | 11.78 | 7.37 | 23.90 | 15.39 | 12.14 | 7.57 |
| ESR 10 | 65.07 | 36.78 | 16.34 | 10.07 | 35.88 | 21.82 | 15.36 | 9.16 | 36.55 | 22.16 | 15.47 | 9.23 | 28.43 | 17.71 | 15.50 | 9.22 | 29.56 | 18.28 | 15.78 | 9.37 |
| ESR 11 | 101.92 | <u>52.27</u> | 18.83 | 11.63 | 53.48 | 30.28 | 17.87 | 10.60 | 54.19 | 30.60 | 17.97 | 10.66 | 40.80 | 23.80 | 18.12 | 10.71 | 41.29 | 24.04 | 18.24 | 10.78 |
| ESR 12 | 90.63 | <u>47.75</u> | 17.98 | 11.10 | 48.13 | 27.78 | 16.97 | 10.10 | 48.75 | 28.07 | 17.06 | 10.15 | 37.09 | 22.01 | 17.17 | 10.18 | 37.51 | 22.22 | 17.27 | 10.23 |

ENVIRONMENTAL STATEMENT

Air Quality

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|--------|-------|--------------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|
| ESR 13 | 41.82 | 25.73 | 12.54 | 8.15 | 25.49 | 16.50 | 11.61 | 7.37 | 26.17 | 16.86 | 11.72 | 7.43 | 21.21 | 13.99 | 11.67 | 7.38 | 22.45 | 14.64 | 12.00 | 7.57 |
| ESR 14 | 36.14 | 22.86 | 13.85 | 8.53 | 22.12 | 14.73 | 12.86 | 7.71 | 22.75 | 15.06 | 12.97 | 7.77 | 18.57 | 12.59 | 12.85 | 7.70 | 20.03 | 13.37 | 13.28 | 7.93 |
| ESR 15 | 59.89 | 34.42 | 14.36 | 9.18 | 33.32 | 20.54 | 13.38 | 8.31 | 33.69 | 20.73 | 13.44 | 8.34 | 26.73 | 16.85 | 13.49 | 8.35 | 26.91 | 16.94 | 13.53 | 8.37 |
| ESR 16 | 76.35 | <u>41.76</u> | 15.52 | 9.89 | 42.16 | 24.92 | 14.70 | 9.06 | 42.73 | 25.19 | 14.79 | 9.10 | 33.12 | 20.07 | 14.90 | 9.13 | 33.38 | 20.19 | 14.94 | 9.17 |
| ESR 17 | 63.32 | 35.99 | 14.68 | 9.37 | 36.70 | 22.23 | 13.99 | 8.65 | 37.20 | 22.48 | 14.07 | 8.69 | 29.13 | 18.07 | 14.13 | 8.70 | 29.32 | 18.16 | 14.17 | 8.72 |
| PSR 1 | | | | | | | | | 20.69 | 13.96 | 11.36 | 6.94 | | | | | 18.84 | 12.73 | 11.65 | 7.09 |
| PSR 2 | | | | | | | | | 19.75 | 13.46 | 11.20 | 6.85 | | | | | 19.38 | 13.02 | 11.84 | 7.19 |
| PSR 3 | | | | | | | | | 19.13 | 13.13 | 11.02 | 6.76 | | | | | 19.58 | 13.13 | 11.79 | 7.17 |
| PSR 4 | | | | | | | | | 18.69 | 12.89 | 10.97 | 6.72 | | | | | 17.90 | 12.24 | 11.41 | 6.96 |
| PSR 5 | | | | | | | | | 20.78 | 14.01 | 12.71 | 7.62 | | | | | 19.07 | 12.86 | 13.15 | 7.85 |
| PSR 6 | | | | | | | | | 20.64 | 13.94 | 12.70 | 7.61 | | | | | 18.81 | 12.72 | 13.08 | 7.81 |

Underlined concentrations represent an exceedance of the relevant Air Quality Objective or Target Level.

* Adjusted NO₂ concentrations only

Table 12.20: Annual Mean Sensitivity analysis results for NO_x and NO₂*: Scenarios 2 – 5 (µg/m³)

| Receptor | Scenario 2: 2026 Opening Year 'Without Development' | | Scenario 3 2026 Opening Year 'With Development' | | Scenario 4 2033 Future Year 'Without Development' | | Scenario 5: 2033 Future Year 'With Development' | |
|----------|---|-----------------|---|-----------------|---|-----------------|---|-----------------|
| | NO _x | NO ₂ | NO _x | NO ₂ | NO _x | NO ₂ | NO _x | NO ₂ |
| ESR 1 | 36.57 | 23.08 | 48.63 | 29.09 | 37.81 | 23.71 | 62.15 | 35.46 |
| ESR 2 | 35.32 | 22.43 | 40.19 | 24.91 | 36.44 | 23.01 | 39.42 | 24.53 |
| ESR 3 | 57.18 | 33.16 | 60.72 | 34.80 | 60.91 | 34.89 | 54.76 | 32.02 |
| ESR 4 | 52.35 | 30.88 | 58.97 | 33.99 | 57.49 | 33.30 | 49.59 | 29.55 |
| ESR 5 | 58.21 | 33.64 | 59.21 | 34.10 | 60.05 | 34.49 | 60.12 | 34.52 |
| ESR 6 | 76.33 | <u>41.76</u> | 76.99 | <u>42.04</u> | 78.79 | <u>42.81</u> | 78.67 | <u>42.76</u> |
| ESR 7 | 44.28 | 26.95 | 45.04 | 27.33 | 45.73 | 27.67 | 42.16 | 25.90 |
| ESR 8 | 60.54 | 34.72 | 61.80 | 35.30 | 63.23 | 35.95 | 65.55 | 37.00 |
| ESR 9 | 49.17 | 29.35 | 50.17 | 29.83 | 51.35 | 30.40 | 56.08 | 32.64 |
| ESR 10 | 70.51 | 39.22 | 72.48 | <u>40.08</u> | 74.16 | <u>40.81</u> | 77.90 | <u>42.43</u> |
| ESR 11 | 111.60 | <u>56.00</u> | 113.68 | <u>56.79</u> | 117.47 | <u>58.21</u> | 119.10 | <u>58.82</u> |
| ESR 12 | 99.02 | <u>51.12</u> | 100.84 | <u>51.84</u> | 104.11 | <u>53.12</u> | 105.48 | <u>53.66</u> |
| ESR 13 | 44.46 | 27.04 | 46.32 | 27.96 | 46.44 | 28.02 | 50.47 | 29.97 |
| ESR 14 | 38.03 | 23.82 | 39.57 | 24.60 | 38.93 | 24.28 | 43.82 | 26.73 |
| ESR 15 | 63.75 | 36.19 | 64.81 | 36.67 | 66.68 | 37.51 | 67.17 | 37.73 |
| ESR 16 | 83.79 | <u>44.92</u> | 85.31 | <u>45.56</u> | 88.06 | <u>46.70</u> | 88.72 | <u>46.97</u> |
| ESR 17 | 71.34 | 39.58 | 72.83 | <u>40.24</u> | 74.76 | <u>41.08</u> | 75.33 | <u>41.32</u> |
| PSR 1 | | | 34.10 | 21.80 | | | 38.36 | 23.99 |
| PSR 2 | | | 31.81 | 20.61 | | | 40.03 | 24.83 |
| PSR 3 | | | 30.42 | 19.88 | | | 40.79 | 25.22 |
| PSR 4 | | | 29.37 | 19.34 | | | 35.14 | 22.34 |
| PSR 5 | | | 34.70 | 22.12 | | | 39.93 | 24.79 |

ENVIRONMENTAL STATEMENT

Air Quality

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| PSR 6 | | | 34.35 | 21.93 | | | 39.01 | 24.32 |
|-------|--|--|-------|-------|--|--|-------|-------|