Technical Memorandum

To:	Grace Macdonald	**From:**	Ali Naghizadeh
Company:	ESR	**SLR Consulting Australia Pty Ltd**	
cc:		**Date:**	27 August 2025
		Project No.	610.V30893.00513

RE: Westlink Stage 2 – Air Quality Assessment Response to DPHI RFI

1.0 Background

In November 2023, SLR prepared an Air Quality Impact Assessment (AQIA) for the proposed Westlink Stage 2 Project (SSD-46983729) (the Project). Following DPHI's review and to address concerns in relation to potential construction stage air quality impacts, the AQIA was updated to include a detailed quantitative assessment of construction stage air emissions (SLR Ref: 610.30893.00509-R14-v1.0). The updated report was issued on 26 February 2025 (the revised AQIA).

The quantitative construction stage air quality assessment presented in the revised AQIA was prepared in general accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (2022) and adopted a conservative approach, including the assumption that all bulk earth works activities would occur concurrently, across the entire site, 7 days/week for 12 months, despite the anticipated bulk works duration being ~9 months. This approach ensures that predicted impacts represent a worst-case scenario.

The revised AQIA considered incremental project impacts and cumulative impacts with background monitoring data recorded by the Bringelly Air Quality Monitoring Station (AQMS). The assessment did not explicitly model emissions from other Mamre Road Precinct (MRP) construction projects as discrete sources.

The revised AQIA did not predict any additional exceedances of 24-hour average $PM_{2.5}$, annual average TSP, or annual average dust deposition assessment criteria as a result of the proposed construction activities.

Exceedances of the annual average PM_{10} and $PM_{2.5}$ criteria were predicted at up to four of the 38 receptors modelled. However, these were concluded to be due to overestimation in emissions associated with the assumption that construction works will occur across the site 7 days/week for 12 months.

The predicted 24-hour average PM_{10} concentrations exceeded the criterion at 21 out of the 38 receptors modelled. For the worst impacted receptor (R5), 13 exceedance days (out of the 365 days of modelling) were predicted.

The Department of Planning, Housing and Infrastructure's (DPHI) request for information dated 15 August 2025 requests further cumulative modelling, explicitly incorporating emissions from other approved/proposed projects in the MRP, in addition to the previously reported project and background contributions.

2.0 Cumulative Impacts and Further Modelling

The revised AQIA considered cumulative impacts by combining predicted project increments with measured background concentrations (daily varying PM_{10} and $PM_{2.5}$ from the Bringelly AQMS; dust deposition assumed at 2 g/m²/month). This ensures that regional sources, existing local activities, and any other sources influencing the ambient environment in the vicinity of the AQMS at the time of monitoring are included in the cumulative totals.

It is acknowledged that emissions from local air emission sources in the vicinity of the Westlink site are not captured by Bringelly AQMS. However, it is also noted that the Bringelly Site would capture emissions from sources in its vicinity that are not expected to significantly impact receptors closest to Westlink. These include construction works at Western Sydney Airport, PGH Bricks & Pavers operations, and other local sources. It is also noted that background data for the year 2021 (when bulk earth works were being undertaken at the Western Sydney Airport site) has been used in the assessment.

Modelling of nearby construction activities was considered by SLR at the time of preparing the revised AQIA but was not performed as attempting to do so would introduce additional uncertainty and would not add value because:

- To model other projects, detailed emissions inventories, construction schedules, and mitigation commitments would be needed. These are typically unavailable or subject to frequent change.
- Using broad assumptions (e.g. “full earthworks across all sites”) risks compounding overestimation while offering little actionable insight.
- Several nearby developments are located at significant distances. Their incremental contributions at the receptors most affected by Westlink Stage 2 would be negligible compared with background variability.
- The revised AQIA assumptions (as reported) already overestimate potential impacts, meaning further “stacking” of sources would compound conservatism without improving realism.
- Additional modelling would not necessarily assist with identification of additional mitigation measures. As noted in the revised AQIA, quantification of the effect of all mitigation options is not possible.

Further to the above:

- Due to the location of the Westlink Stage 2 project in relation to receptors and other proposed/approved developments, the worst impacted receptors are not frequently impacted by the Project and other construction activities at the same time. **Figure 1** illustrates the sites where bulk earth works would potentially be occurring at the same time as Westlink Stage 2. The figure also illustrates the location of the worst impacted receptors (those with more than one exceedance per year predicted). As shown, due to the relative location of these receptors, they are not typically affected by emissions from other projects at the same time. When winds carry emissions from Westlink towards the most impacted sensitive receptors (e.g. easterly or westerly winds), they generally carry emissions from other sites away from the receptors most affected by the Project.
- Several precinct projects are located at significant distances. A review of the 24-hour average PM_{10} predictions presented in the revised AQIA found that predicted concentrations reduce by approximately 50%, 75% and 90% within 100 m, 500 m and 1,000 m of the Project boundary respectively. As pollutant concentrations drop with distance, the incremental contribution from other sources of emissions at receptors most impacted by Westlink Stage 2 is expected to be negligible. SLR

understands that the recently approved Westgate Industrial Estate project (SSD-23480429) is the closest project to Westlink with potentially overlapping bulk earth works activities. Receptors to the southeast of Westlink Stage 2 (R17 in revised AQIA), which are the closest receptors potentially impacted by Westlink Stage 2 and Westgate Industrial Estate simultaneously, are located over 1,000 m from Westgate Industrial Estate. It is noted that receptors to the north of Westlink Stage 2 are located closer to Westgate Industrial Estate. However, as outlined above, these receptors would not simultaneously be impacted by both projects, as southerly winds that would blow emissions from Westlink Stage 2 towards these receptors would be blowing emissions from Westgate Industrial Estate away from them.

- A review of air quality assessments for other recently approved projects shows that inclusion of additional sources does not necessarily lead to increased exceedances of ambient criteria. For example, the Westgate Industrial Estate air quality assessment, which considered emissions from additional sources such as Westlink and the proposed Stockland Fife project at 270 Aldington Road, predicted fewer exceedances of the 24-hour average PM_{10} criteria at Mount Vernon receptors immediately to the east of Westlink Stage 2 than the revised AQIA modelling study.

Figure 1 – Westlink Stage 2 Location within MRP

3.0 Suggested Approach

Based on our experience in the assessment, monitoring and management of air quality impacts from construction projects, we believe the most effective way to manage potential cumulative air quality impacts in the Mamre Road Precinct would be through a program of real-time monitoring combined with adaptive site management. Unlike dispersion modelling, which could only estimate potential overlaps using highly uncertain assumptions about the timing, scale, and duration of neighbouring projects, monitoring would provide a direct measure of what the particulate levels sensitive receptors are actually experiencing at any point in time. By installing continuous particulate monitors (PM_{10} and, where relevant, $PM_{2.5}$) at boundary or representative receptor locations, the project would be able to capture ambient conditions that already integrate emissions from all relevant sources, including Westlink Stage 2, other active construction sites in the precinct, and regional events such as dust storms or hazard reduction burns.

The monitoring program should be complemented by a Trigger Action Response Plan (TARP), which would ensure that elevated results translate into timely and effective remedial actions onsite. The TARP would set clear thresholds for intervention and link these to specific responses, ranging from intensifying dust suppression, altering the sequence of works, reducing vehicle movements, or temporarily ceasing dust-generating activities under adverse conditions. This system would create a feedback loop in which actual measured impacts, rather than speculative predictions, drive the management response. In practice, this approach would provide greater confidence that air quality criteria could be met at sensitive receptors, while maintaining flexibility to respond to the dynamic nature of construction activities and changing meteorological conditions, and would be a much more effective use of resources than further modelling.

4.0 Conclusion

The revised AQIA provided a robust and conservative assessment of potential air quality impacts from Westlink Stage 2 construction emissions.

Undertaking additional cumulative dispersion modelling of neighbouring projects would introduce significant uncertainty without improving the accuracy of the assessment or altering the mitigation strategy. Instead, the most reliable safeguard against exceedances would be the adoption of real-time monitoring and an adaptive Trigger Action Response Plan. This approach would directly capture and manage cumulative contributions from all sources, including neighbouring projects, thereby ensuring that sensitive receptors would be protected in practice.

We trust this addresses the DPHI's concerns. Please let us know if you require further clarification.

Regards,

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