

Sydney Metro West – EIS Submission

2 May 2022

After reviewing the *Environmental Impact Statement for rail infrastructure, stations, precincts and operations between Westmead and the Sydney CBD*, this submission requests the following amendments to the design:

1. Re-align the tunnels so they are aligned with the centre of Lancelot Street, Five Dock and at a minimum depth of 30m from the surface to the crown of the tunnels
2. Update the design to show the track form under Lancelot Street, Five Dock to be Type 3A (Isolated Slab Track)

Key Concerns

The key concerns raised in this submission are:

- a) Damage to properties on Lancelot Street, Five Dock due to tunnel construction
- b) Noise and vibration caused by trains during operation of the Metro, causing ongoing disturbance to residents in their homes
- c) Impact of the tunnels on the future value and use of land

How the amendments will address these concerns

The amendments requested in this submission will address these concerns, ensuring the residents of Lancelot Street have continued enjoyment of their properties, as outlined below.

Table 1: How the amendments will address the key concerns

Key concerns	Mitigating measures (as per requested amendments)		
	Re-align to centre of Lancelot Street	30m minimum depth to crown of tunnels	Type 3A track form
Noise and vibration during construction of the tunnels	✓	✓	✗
Noise and vibration caused by trains during operation of the Metro	✓	✓	✓
Impact on the future value and use of land	✓	✓	✗

Amendment 1: Re-align the tunnels so they are aligned with the centre of Lancelot Street and at a minimum depth of 30m from the surface to the crown of the tunnels

Key concerns addressed by this amendment:

- Reduce damage to properties; and
- Reduce the noise and vibration experienced by residents resulting from trains during operation of the Metro; and
- Reduce the impact on the future value and use of land

Many impacted properties on Lancelot Street are older properties on pillars which are more susceptible to vibration, and there are also a number of newly built homes that have been designed to current ground conditions – not to conditions where there is construction and operation of a train tunnel directly below.

A key requirement of the Rail Infrastructure Noise Guideline, NSW Environment Protection Authority (EPA), 2013 is *“For new rail line developments it is important that the route is carefully selected to avoid creating noise impacts. Particular attention should be paid to the proposed rail line’s location in relation to existing and planned residential areas, and the possibility of using existing topographical features to mitigate noise”*. The proposed alignment of the tunnels under Lancelot Street shows there has been no attempt by Sydney Metro to avoid creating noise impacts to residents on Lancelot Street, with the tunnels proposed to pass directly under properties at a depth of only 17-23m from the surface to the crown of the tunnel.

Re-alignment of the tunnels with the centre of Lancelot Street

The Sydney Metro tunnel alignment was published on the Environmental Impact Statement (EIS) in 2021 via the online portal; while the country was battling surge of Covid-19 cases due to the Delta variant. The published information on tunnel alignment indicated the two tunnels were set a significant distance apart due to the station design at Five Dock which was originally planned to have two separate platforms. Prior to the EIS submission for public review, the geotechnical assessment was undertaken on Garfield Street for the EIS submission initially at two points of the street, which indicated that the Metro tunnel would run under Garfield Street, which should be noted that it is significantly wider than Lancelot Street. However, the tunnel alignment was later confirmed to be under Lancelot Street where no geotechnical assessment was conducted nor were the residents notified of the planned alignment prior to EIS submission.

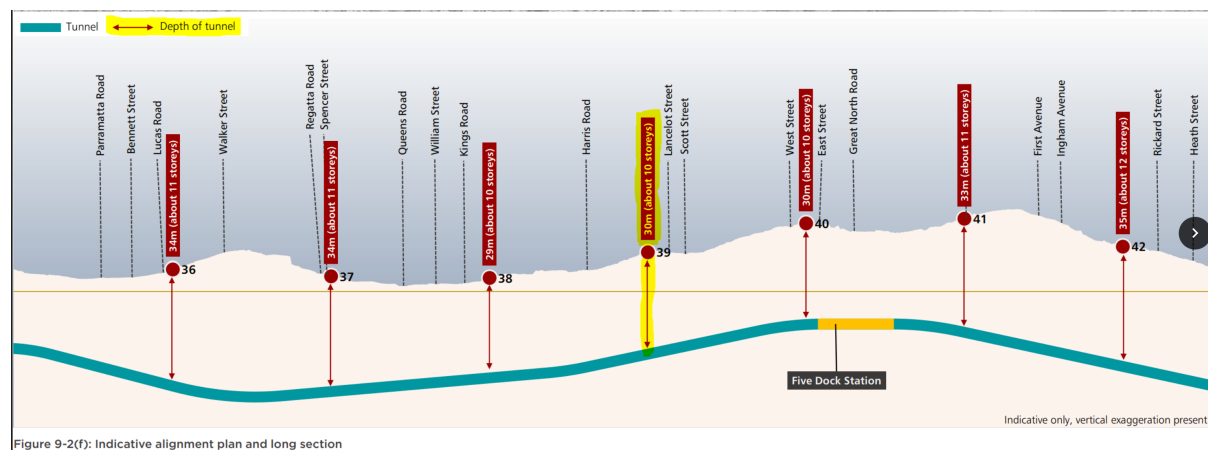
The EIS for public review was only made available online, and there were no community sessions held by the Sydney Metro project team and residents were not given the opportunity to understand the vastly technical EIS document and its contents. Prior to the EIS publication, residents were of the assumption the Metro tunnels will pass through Garfield Street given the geotechnical assessment that took place on Garfield Street was witnessed by many. Residents were also not provided the reasons behind the alignment change between the two streets. Due to the lack of understanding the EIS technical documentation, its contents and unfamiliarity of how submission should be made for objections; many residents did not raise the objections on the published details at the time to Sydney Metro project. But this year, the residents have been able to collectively understand the published details of the EIS and have raised the question to Sydney Metro team on why the tunnel alignment was not planned for Garfield Street but to narrower Lancelot Street. The residents are yet to receive a comprehensive response to this question from the Sydney Metro team.

The proposed tunnel alignment runs directly under properties on Lancelot Street, which has a direct impact on the future value and use of land for the affected properties. Re-aligning the tunnels so they are aligned with the centre of Lancelot Street would minimise the footprint of the tunnels under the existing properties, significantly reducing the risk of damage to properties and ensuring residents have continued freedom to develop their properties as residential areas continue to be re-zoned to allow for more significant developments. This would also minimise the loss in value to their property as a result of limitations added to the property title through the substratum acquisition of land by Sydney Metro.

Increasing the Tunnel Depth to a minimum of 30m from the surface to the crown of the tunnels

The tunnel depth indicated in the approved EIS is 30 metres from surface to crown of the tunnel (see Figure 9-2(f) from the EIS - **Diagram 2**). However, in late 2021 the interactive Sydney Metro portal website indicated the tunnel depth under the houses of Lancelot Street varied from 23 metres to 17 metres; which is significantly shallower than the approved tunnel depth from the EIS. There was no notification given to residents of the loss of depth in tunnel alignment, and when the residents questioned the change in depth the Sydney Metro team advised that there has been no change to tunnel depth and it is 30 metres where the depth is measured from surface to track level and not to the crown of the tunnel.

Diagram – 2 – Depth of Tunnels as per the approved EIS



Increasing the tunnel depth (to at least what was originally proposed in the EIS i.e 30 metres from surface to crown of tunnel) reduces the impact of noise and vibration on properties as the distance from the tunnels to the properties would be greater. This would also reduce the impact on future value and use of the land as residents would retain full rights over a greater depth of land which would allow more development opportunities in the future as zonings change.

Amendment 2: Update the design to show the track form under Lancelot Street to be Type 3A (Isolated Slab Track)

Key concerns addressed by this amendment:

- Reduce the noise and vibration experienced by residents resulting from trains during operation of the Metro

Sydney Metro is proposing to use the Type 2 track form under Lancelot Street which reduces ground-borne vibration as trains pass along the track. The modelling from Sydney Metro shows that this track form reduces the predicted noise to 30-35 dBA which is marginally below the NSW Environment Protection Authority maximum of 35 dBA for residential properties.

Lancelot Street is a quiet street with low levels of ambient noise and very little road traffic. Residents are concerned that models used to predict noise levels from ground-borne vibration, such as the model used by Sydney Metro, have inherent risk of inaccuracy, and designing the tunnels to be so close to the 35 dBA maximum would result in the sound levels exceeding 35 dBA. This would be noticeable to the residents in both daytime and night time. Of particular concern, is the model used by Sydney Metro do not appear to take into consideration the increase in noise resulting from dual tunnels under each property at close distance, and also the increase in noise levels as the train wheels and tracks start to wear, which could increase sound levels by up to 10 dBA each (*ref Federal Transit Administration Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123, dated September 2018*).

The modelling by Sydney Metro also showed the predicted ground-borne noise levels if the Type 3A track form was used. This would result in much more acceptable sound levels of 25-30 dBA.

This submission calls for the Type 3A track form as a minimum requirement to be used in the tunnels under Lancelot Street to ensure vibration and sound levels remain at an acceptable level both when the Metro becomes operational, and also in future when the train wheels and tracks start to wear.