**State code 4: Development in a light rail environment**

[Guide to Development in a Transport Environment: Light Rail](https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Guide-to-development-in-a-transport-environment-light-rail) provides direction on how to address this code.

**Table 4.1: All development in a light rail environment**

| **Performance outcomes** | **Acceptable outcomes** | **Response** |
| --- | --- | --- |
| **Buildings and structures** |
| **PO1** The location of buildings, **structures**, infrastructure, services and utilities does not create a safety hazard in a **light rail corridor** or cause damage to, or obstruct, **light rail transport infrastructure**.Note: The Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018 provides guidance on how to comply with this performance outcome. | **AO1.1** Buildings, **structures**, infrastructure services and utilities are not located in a **light rail corridor**.AND**AO1.2** Buildings, **structures**, infrastructure, services and utilities can be maintained without requiring access to a **light rail corridor**.AND**AO1.3** Buildings, **structures** and infrastructure are set back horizontally a minimum of 3 metres from the outermost projection of **overhead line equipment**.AND**AO1.4** Vegetation is set back horizontally a minimum of 1 metre from the **light rail hazard zone** and does not exceed 5 metres in height at maturity. AND**AO1.5** Construction activities do not encroach into a **light rail hazard zone**.AND**AO1.6** Construction activities do not divert vehicle, pedestrian or cycle traffic into the **light rail hazard zone**.  | Complies with PO# / AO#Use this column to indicate whether compliance is achieved with the relevant PO or AO (or if they do not apply), and explain why |
| **PO2** Buildings and **structures** are designed and constructed to not create a safety hazard by distracting drivers of **light rail vehicles**. | **AO2.1** Facades of buildings and **structures** facing a **light rail corridor** are made of non-reflective materials.OR**AO2.2** Facades of buildings and **structures** do not reflect point light sources into the face of oncoming **light rail vehicles**.AND**AO2.3** External lighting of buildings and **structures** is not directed into the face of oncoming **light rail vehicles** and does not involve flashing or laser lights. |  |
| **PO3** Development does not add or remove **loading** that will cause damage to **light rail transport infrastructure** or a **light rail corridor**.Note: To demonstrate compliance with this performance outcome, it is recommended a Registered Professional Engineer of Queensland (RPEQ) certified geotechnical assessment is provided.  | No acceptable outcome is prescribed.  |  |
| **PO4** Road, pedestrian and bikeway bridges over a **light rail corridor** are designed and constructed to prevent projectiles from being thrown onto **light rail**. | **AO4.1** Road, pedestrian and bikeway bridges include throw protection screens in accordance with Civil Engineering Technical Requirement CIVIL-SR-008 – Protection screens, Queensland Rail.  |  |
| **PO5** Construction activitiesdo not cause ground movement or vibration impacts in a **light** **rail corridor**.Note: To demonstrate compliance with this performance outcome, it is recommended a RPEQ certified geotechnical assessment is prepared.  | No acceptable outcome is prescribed. |  |

| **Performance outcomes** | **Acceptable outcomes** | **Response** |
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| **Filling, excavation and retaining structures** |
| **PO6** Filling, excavation and **retaining structures** do not interfere with, or result in damage to, infrastructure or services in a **light rail corridor**.Note: Information on the location of services and public utility plants in a **light rail corridor** can be obtained from the ‘Dial Before You Dig’ service.Where development will impact on an existing or future service or public utility plant in a **light rail corridor** such that the service or public utility plant will need to be relocated, the alternative alignment must comply with the standards and design specifications of the relevant service or public utility provider, and any costs of relocation are to be borne by the developer. | No acceptable outcome is prescribed. |  |
| **PO7** Filling, excavation, building foundations and **retaining structures** do not undermine or cause subsidence of a **light rail corridor**. Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment is provided. Section 2.2 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018 provides guidance on how to comply with this performance outcome. | No acceptable outcome is prescribed.  |  |
| **PO8** Filling and excavation, building foundations and **retaining structures** do not cause ground water disturbance in a **light rail corridor**.Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment is provided.  | No acceptable outcome is prescribed. |  |
| **PO9** Excavation, boring, piling, blasting or fill compaction during construction of a development does not result in ground movement or vibration impacts that would cause damage or nuisance to **light rail transport infrastructure** or **light rail transport infrastructure works**. Note: To demonstrate compliance with this performance outcome, it is recommended an RPEQ certified geotechnical assessment is provided. Section 2.2 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018 provides guidance on how to comply with this performance outcome. | No acceptable outcome is prescribed.  |  |
| **PO10** Fill material from a development site does not result in contamination of a **light rail corridor**. | **AO10.1** Fill material is free of contaminants including acid sulfate content.Note: Soil and rocks should be tested in accordance with AS 1289 – Methods of testing soils for engineering purposes and AS 4133-2005 – Methods of testing rocks for engineering purposes.AND**AO10.2** Compaction of fill is carried out in accordance with the requirements of AS 1289.0 2000 – Methods of testing soils for engineering purposes. |  |
| **PO11** Filling and excavation does not cause wind-blown dust nuisance in a **light rail corridor**. | **AO11.1** Compaction of fill is carried out in accordance with the requirements of AS 1289.0 2000 – Methods of testing soils for engineering purposes.AND**AO11.2** Dust suppression measures are used during filling and excavation activities such as wind breaks or barriers and dampening of ground surfaces. |  |
| **Stormwater and drainage** |
| **PO12** Development does not result in an **actionable nuisance** or worsening of stormwater, flooding or drainage impacts in a **light rail corridor**. Note: Section 2.3 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018 provides guidance on how to comply with this performance outcome. | No acceptable outcome is prescribed.  |  |
| **PO13** Run-off from the development site during construction of development does not cause siltation of stormwater infrastructure affecting a **light rail corridor**. | **AO13.1** Run-off from the development site during construction is not discharged to stormwater infrastructure for a **light rail corridor**. |  |
| **Access** |
| **PO14** Vehicular access for a development does not create a safety hazard for **light rail transport infrastructure** or result in a worsening of operating conditions for the **light rail**.Note: Section 2.4 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018 provides guidance on how to comply with this performance outcome. | **AO14.1** Development does not involve new or changed access between the premises and the **light rail corridor**.Note: Where a new or changed access between the premises and a **light rail corridor** is proposed, the proposal will need to be assessed to determine if the vehicular access for the development is safe and whether the access will adversely affect public passenger transport services. Further information regarding design requirements for vehicular access can be found in the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018 OR**AO14.2** Where a property directly abuts a road within the **light rail corridor**, vehicular access is configured for left in and left out turning movements only.AND**AO14.3** On-site vehicle circulation is designed to give priority to entering vehicles at all times to ensure movement of **light rail vehicles** is not impeded by an overflow of traffic queuing to enter the premises. |  |
| **PO15** Development does not damage or interfere with **public passenger transport infrastructure**, **public passenger services** or pedestrian and cycle access to **public passenger transport infrastructure** and **public passenger services**.Note: Section 2.5 of the The Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018 provides guidance on how to comply with this performance outcome. | **AO15.1** Vehicular access and associated road access works for a development are not located within 5 metres of existing **public passenger transport infrastructure**.AND**AO15.2** Development does not necessitate the relocation of existing **public passenger transport infrastructure**.AND**AO15.3** On-site vehicle circulation is designed to give priority to entering vehicles at all times so vehicles using a vehicular access do not obstruct **public passenger transport infrastructure**, **public passenger services** and pedestrian or cycle access to **public passenger transport infrastructure** and **public passenger services**. AND**AO15.4** The normal operation of **public passenger transport infrastructure** or **public passenger services** is not interrupted during the construction of the development. |  |
| **Planned upgrades** |
| **PO16** Development does not impede delivery of **planned upgrades** of **light rail transport infrastructure**. | **AO16.1** Development is not located on land identified by the Department of Transport and Main Roads as land required for the **planned upgrade** of **light rail transport infrastructure**.Note: Land required for the **planned upgrade** of **light rail transport infrastructure** is identified in the **DA mapping system**.OR**AO16.2** Development is sited and designed so that permanent buildings, **structures**, infrastructure, services or utilities are not located on land identified by the Department of Transport and Main Roads as land required for the **planned upgrade** of **light** **rail transport infrastructure**.OR all of the following acceptable outcomes apply:**AO16.3** **Structures** and infrastructure located on land identified by the Department of Transport and Main Roads as land required for the **planned upgrade** of a of **light** **rail transport infrastructure** are able to be readily relocated or removed without materially affecting the viability or functionality of the development.AND**AO16.4** Development does not involve filling and excavation of, or material changes to, land required for a **planned upgrade** of **light** **rail transport infrastructure**. AND**AO16.5** Land is able to be reinstated to the pre-development condition at the completion of the use. |  |

**Table 4.2: Environmental emissions**

Statutory note: Where a **light rail** is co-located in the same transport corridor as a state-controlled road, development should instead comply with Environmental emissions of State code 1: Development in a state-controlled road environment.

Where a **light rail** is co-located in the same transport corridor as a railway, development should instead comply with Environmental emissions of State code 2: Development in a railway environment.

| **Performance outcomes** | **Acceptable outcomes** | **Response** |
| --- | --- | --- |
| **Noise** |
| **Accommodation activities** |
| **PO17** Development involving:1. an **accommodation activity**; or
2. land for a future **accommodation activity**

minimises noise intrusion from a **light rail** in **habitable rooms**.  | **AO17.1** A noise barrier or earth mound is provided that is designed, sited and constructed:1. to meet the following external noise criteria at all facades of the building envelope:
2. ≤55 dB(A) Leq (1 hour) façade corrected (maximum hour between 6 am and 10 pm);
3. ≤50 dB(A) Leq (1 hour) façade corrected (maximum hour between 10 pm and 6 am);
4. ≤64 dB(A) Lmax façade corrected (between 10pm and 6am);
5. in accordance with chapter 7 – Integrated noise barrier design of the Transport Noise Management Code of Practice – Volume 1 Road Traffic Noise, Department of Transport and Main Roads, 2013.

Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018.If the building envelope is unknown, the deemed-to-comply setback distances for buildings stipulated by the local planning instrument or relevant building regulations should be used.In some instances, the design of noise barriers and mounds to achieve the noise criteria above the ground floor may not be reasonable or practicable. In these instances, any relaxation of the criteria is at the discretion of the Department of Transport and Main Roads.OR all of the following acceptable outcomes apply:**AO17.2** Buildings which include a **habitable room** are setback the maximum distance possible from the **light rail**.AND**AO17.3** Buildings are designed and oriented so that **habitable rooms** are located furthest from the **light rail**.AND**AO17.4** Buildings are designed and constructed using materials which ensure that **habitable rooms** meet the following internal noise criteria:1. ≤35 dB(A) Leq (1 hour) (maximum hour over 24 hours).

Note: Noise levels from a **light rail** are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise.To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018.  | Complies with PO# / AO#Use this column to indicate whether compliance is achieved with the relevant PO or AO (or if they do not apply), and explain why |
| **PO18** Development involving an **accommodation activity** minimises noise intrusion from a **light rail** in **outdoor spaces for passive recreation**. | **AO18.1** A noise barrier or earth mound is provided which is design, sited and constructed:1. to meet the following external noise criteria in **outdoor spaces for passive recreation**:
2. ≤52 dB(A) Leq (1 hour) free field (maximum hour between 6 am and 10 pm);
3. ≤66 dB(A) Lmax free field;
4. in accordance with chapter – Integrated noise barrier design of the Transport Noise Management Code of Practice – Volume 1 Road Traffic Noise, Department of Transport and Main Roads, 2013.

Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018.OR**AO18.2** Each dwelling has access to an **outdoor space for passive recreation** which is shielded from **light rail transport infrastructure** by a building, a solid gap-free fence, or other solid gap-free **structure**.AND**AO18.3** Each dwelling with a balcony directly exposed to noise from a **light rail** has a continuous solid gap-free balustrade (other than gaps required for drainage purposes to comply with the Building Code of Australia). |  |
| **Childcare centres and educational establishments** |
| **PO19** Development involving a:1. **childcare centre**; or
2. **educational establishment**

minimises noise intrusion from a **light rail** in **indoor education areas** and **indoor play areas**.  | **AO19.1** A noise barrier or earth mound is provided which is design, sited and constructed:1. to meet the following external noise criteria at the building envelope:

≤55 dB(A) Leq (1 hour) façade corrected (maximum hour during normal opening hours);1. in accordance with chapter 7 – Integrated noise barrier design of the Transport Noise Management Code of Practice – Volume 1 Road Traffic Noise, Department of Transport and Main Roads, 2013.

Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018. If the building envelope is unknown, the deemed-to-comply setback distances for buildings stipulated by the local planning instrument or relevant building regulations should be used.OR all of the following acceptable outcomes apply:**AO19.2** Buildings which include **indoor education areas** and **indoor play areas** are setback the maximum distance possible from a **light rail**.AND**AO19.3** Buildings are designed and oriented so that **indoor education areas** and **indoor play areas** are located furthest from a **light rail**.AND**AO19.4** Buildings are designed and constructed using materials which ensure **indoor education areas** and **indoor play areas** meet the following internal noise criteria:1. ≤35 dB(A) Leq (1 hour) (maximum hour during opening hours).

Note: Noise levels from a **light rail** are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise.To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018.  |  |
| **PO20** Development involving a: 1. **childcare centre**; or
2. **educational establishment**

minimises noise intrusion from a **light rail** in **outdoor education areas** and **outdoor play areas**. | **AO20.1** A noise barrier or earth mound is provided which is design, sited and constructed:1. to meet the following external noise criteria in **outdoor education areas** and **outdoor play areas**:
2. ≤52 dB(A) Leq (1 hour) free field (maximum hour during normal opening hours);
3. ≤66 dB(A) Lmax free field (during normal opening hours);
4. in accordance with chapter 7 – Integrated noise barrier design of the Transport Noise Management Code of Practice – Volume 1 Road Traffic Noise, Department of Transport and Main Roads, 2013.

Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018. OR**AO20.2** Each **outdoor education area** and **outdoor play area** is shielded from noise generated from a **light rail** by a building, a solid gap-free fence, or other solid gap-free **structure**. |  |
| **Hospitals** |
| **PO21** Development involving a **hospital** minimises noise intrusion from a **light rail** in **patient care areas**. | **AO21.1** **Hospitals** are designed and constructed using materials which ensure **patient care areas** meet the following internal noise criteria:1. ≤35 dB(A) Leq (1 hour) (maximum hour during opening hours).

Statutory note: Noise levels from a **light rail** are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise.Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018.  |  |
| **Vibration** |
| **Hospitals** |
| **PO22** Development involving a **hospital** minimises vibration impacts from a **light rail** in **patient care areas**. | **AO22.1** **Hospitals** are designed and constructed to ensure vibration in the treatment area of a **patient care area** does not exceed a vibration dose value of 0.1m/s1.75.AND**AO22.2** **Hospitals** are designed and constructed to ensure vibration in the ward area of a **patient care area** does not exceed a vibration dose value of 0.4m/s1.75.Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified vibration assessment report be provided.  |  |
| **Light** |
| **PO23** Development involving an **accommodation activity** or **hospital** minimises lighting impacts from a **light rail**. | **AO23.1** Buildings for an **accommodation activity** or **hospital** are designed to minimise the number of windows or transparent/translucent panels facing a **light rail**. AND**AO23.2** Windows facing a **light rail** include treatments to block light from a **light rail**. |  |

**Table 4.3: Development in a future light rail environment**

| **Performance outcomes** | **Acceptable outcomes** | **Response**  |
| --- | --- | --- |
| **PO24** Development does not impede delivery of **light rail infrastructure** in a **future light rail corridor**. | **AO24.1** Development is not located in a **future light rail corridor**.OR**AO24.2** Development is sited and designed so that permanent buildings, **structures**, infrastructure, services or utilities are not located in a **future light rail corridor**.OR all of the following acceptable outcomes apply:**AO24.3** **Structures** and infrastructure located in a **future light rail corridor** are able to be readily relocated or removed without materially affecting the viability or functionality of the development.AND**AO24.4** Development does not involve filling and excavation of, or material changes to, a **future light rail corridor**. AND**AO24.5** Land is able to be reinstated to the pre-development condition at the completion of the use. | Complies with PO# / AO#Use this column to indicate whether compliance is achieved with the relevant PO or AO (or if they do not apply), and explain why |
| **PO25** Filling, excavation, building foundations and **retaining structures** do not undermine, cause subsidence of, or groundwater seepage into, a **future light rail corridor**. Note: To demonstrate compliance with this performance outcome, it is recommended that an RPEQ certified geotechnical assessment is provided, prepared in accordance with Volume 3 of the Road Planning and Design Manual, 2nd edition, Department of Transport and Main Roads, 2016.Section 2.2 of the: Guide to Development in a Transport Environment: Light Rail, Department of Transport and Main Roads, 2018 provides guidance on how to comply with this performance outcome. | No acceptable outcome is prescribed. |  |
| **PO26** Fill material from a development site does not result in contamination of land for a **future** **light rail corridor**. | **AO26.1** Fill material is free of contaminants including acid sulfate content.Note: Soil and rocks should be tested in accordance with AS1289 – Methods of testing soils for engineering purposes and AS4133 2005 – Methods of testing rocks for engineering purposes.AND**AO26.2** Compaction of fill is carried out in accordance with the requirements of AS 1289.0 2000 – Methods of testing soils for engineering purposes. |  |
| **PO27** Development does not result in an **actionable nuisance**, or worsening of stormwater, flooding or drainage impacts in a **future light rail corridor**. | No acceptable outcome is prescribed.  |  |