



Physical Environment – Air Quality, Surface Water, Groundwater and Land Contamination

The Environment Effects Statement (EES) for Yan Yean Road Upgrade – Stage 2 examines the potential environmental, social, cultural and economic impacts of the Project and identifies how they will be avoided, mitigated or managed.

To inform the EES for the Project, we completed a series of technical investigations. We engaged a team

of independent technical experts to carry out these investigations that included field surveys, desktop modelling and assessments.

The results of these investigations helped to assess the existing air quality and presence of soil contaminants, groundwater and surface water – enabling us to develop comprehensive plans to minimise and manage the Project’s potential impacts on the environment.

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Yan Yean Road to
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Authorised by the Victorian Government, 1 Treasury Place, Melbourne

Air Quality

What the studies found

Several sources of information helped to inform the air quality assessment. These included:

- characterising local air quality using data from the Environment Protection Authority (EPA)
- reviewing national and state air quality legislation and policies
- identifying the construction activities that could impact local air quality during construction
- predicting the level of greenhouse gases that that future traffic will create.

The air quality impact assessment characterised the existing air quality by looking at the amounts and concentrations of pollutants found in the air.

The existing air quality contained relatively high levels of pollutants that can be attributed to bushfires, planned burns, local dust storms and smoke from wood heaters during winter.

Minimising the impact

The construction activities that could potentially impact local air quality are:

- release of dust during earthworks and tree and vegetation removal
- diesel and petrol-powered construction vehicles and equipment
- odour emissions generated during excavation of any contaminated material
- release of greenhouse gas emissions during demolition and earthworks.

We'll put measures in place to avoid, minimise and manage air quality impacts, including:

- preparing and implementing a CEMP that includes measures to manage air quality in accordance with the Project's objectives and statutory requirements
- fitting all construction vehicles and machinery with appropriate emission controls
- reviewing construction works during dry and windy weather conditions, and in response to community requests
- applying best practice construction measures to reduce emissions, including turning off idle engines for machinery and vehicles on site
- integrating sustainable practices to minimise our impact, particularly reducing our greenhouse gas emissions from construction of the Project.

➔ After construction is complete, the operational and maintenance impacts on air quality are expected to be minimal.

The studies showed that:

- during maintenance activities, there's low potential for air emissions to be generated by maintenance vehicles and road surface works
- there's low potential for generating greenhouse gases as a result of operating machinery and equipment to complete operation and maintenance activities
- the Department of Transport will manage potential operational and maintenance impacts in accordance with their relevant policies and procedures.



Surface Water

What the studies found

Several investigations helped to inform the surface water assessment. These investigations included:

- potential changes to flooding conditions after construction, including frequency and duration of flooding and increases in flood levels or flow speed
- developing a drainage model to minimise the risk of flooding
- a stormwater quality model to assess the potential for discharge of polluted water during and after construction
- identifying existing and future water infrastructure near the Project area.

Technical specialists relied on two models to complete the surface water assessment. These were:

- a Model for Urban Stormwater Improvement Conceptualisation (MUSIC) to assess stormwater quality, determine stormwater pollutant sources and calculate pollutant reduction targets for the Project to meet
- a one-dimension modelling software package to assess drainage flow impacts and estimate existing drainage conditions.

The Shire of Nillumbik wetland is a man-made wetland on the north-east corner of Youngs Road and Yan Yean Road, used to assist with local drainage.

Minimising the impact

Construction activities could potentially impact local surface water in the following ways:

- construction site erosion could potentially release sediment to areas downstream
- potential construction pollutants mixing with surface water that will impact water quality
- the placement of temporary works, stockpiles and construction machinery and equipment could interfere with stormwater flows after a heavy rain event. This could potentially lead to increased stormwater levels, flow speeds and flood frequency
- local wetlands, including man-made wetlands such as the Shire of Nillumbik wetland, and their water quality could be impacted if construction activities are not managed well. The Shire of Nillumbik wetland is a man-made wetland on the north-east corner of Youngs Road and Yan Yean Road, used to assist with local drainage.

To appropriately mitigate construction impacts, we'll consult with relevant authorities to prepare and implement a CEMP.

This will include measures to protect surface water in accordance with the Project's water quality objectives and statutory requirements.

Road operation and maintenance activities could potentially impact local surface water in the following ways:

- changes to drainage or flooding behaviour due to changes to ground levels, drainage elements and road drainage catchments
- more water-resistant surfaces could lead to more stormwater runoff, affecting areas including Yarrambat Lake
- the Project footprint directly impacts on the capacity of the constructed dam at Plenty Valley Christian College.

To address road operation and maintenance impacts, we'll implement the following mitigation measures:

- prepare a detailed drainage design in accordance with Melbourne Water and Council requirements that meets the relevant Austroads criteria, which includes an assessment of potential risks of spills on the new road reaching waterways e.g. from car accidents leaking fuel
- include plans to avoid drainage impacts on the two River Red Gum trees near the Bridge Inn Road intersection during the detailed design phase
- detailed project design will maintain the capacity of existing local drainage basins and wetlands, with appropriate consultation with Councils and Plenty Valley Christian College to make sure the reinstated basins have the appropriate capacity
- if any water management systems on private properties will be impacted, we'll consider either replacing the systems or incorporating connections into the Project drainage design
- upgrade table drains at the top of embankments into grassed swales connected to the kerb outlets.

Groundwater

What the studies found

Several investigations helped to inform the groundwater assessment. These investigations included:

- installing two geotechnical bores on-site
- a desktop review of available groundwater information and data
- interrogating how construction methods could affect groundwater levels or quality, particularly because piling and cut and fill activities will be required to construct the new road
- identifying what activities have the potential for spills during construction, operation and maintenance
- assessing if and how the road upgrade could permanently alter groundwater in the area.

The groundwater assessment concluded that construction activities are unlikely to have a significant impact to groundwater in the area, because groundwater is found 60m below ground level. None of our planned activities will go to that depth.

The potential for groundwater to be impacted by construction pollutants is considered unlikely given the depth to groundwater and the nature of the surrounding geology.

Minimising the impact

We'll prepare a CEMP that will outline actions to be implemented in the unlikely event that groundwater is unexpectedly encountered during construction.

Any potential operational and maintenance impacts will be managed by the Department of Transport in accordance with their relevant policies and procedures.

Contaminated Land

What the studies found

Several sources of information helped to develop the contaminated land assessment. These included:

- looking into any historical activities around the Project area that may have caused soil contamination in the past that's likely to be encountered during construction
- identifying Contaminants of Potential Concern (CoPC) associated with historical activities in and near the Project area
- reviewing available information about the presence of acid sulfate soils that we might come across during construction
- collecting 35 soil samples from 34 locations across the Project area. The sample areas were selected based on the result of desktop reviews that identified areas of potential existing contamination

- assessing the potential impact existing land contamination could have on the Project design
- exploring spoil management options that will appropriately manage spoil produced during construction. Spoil is unwanted waste material generated through earthworks.

Minimising the impact

We identified potential impacts that some construction activities could have on existing contaminated land. They are:

- a low potential to disturb or interact with contaminated soil or acid sulfate soils
- if contaminated material is managed incorrectly, it could have detrimental environmental consequences.

To make sure potential construction impacts are properly managed, we'll develop and implement a CEMP in accordance with relevant legislation and guidelines.

The CEMP will outline how we'll manage known contaminated soil and unexpected contaminated material encountered during construction. It'll also address potential impacts from chemical leaks or spills during construction.

Any potential operational and maintenance impacts will be managed by the Department of Transport through their environmental management system and standards for managing declared arterial roads in Victoria.

To better understand the potential impacts the Project could have on air quality, surface water, groundwater and previously contaminated land, technical specialists assessed the existing conditions in and around the Project area and compared that to the predicted conditions during and after construction.

These assessments found that the Project is likely to have a low impact on air quality, surface water, groundwater and existing land contamination.

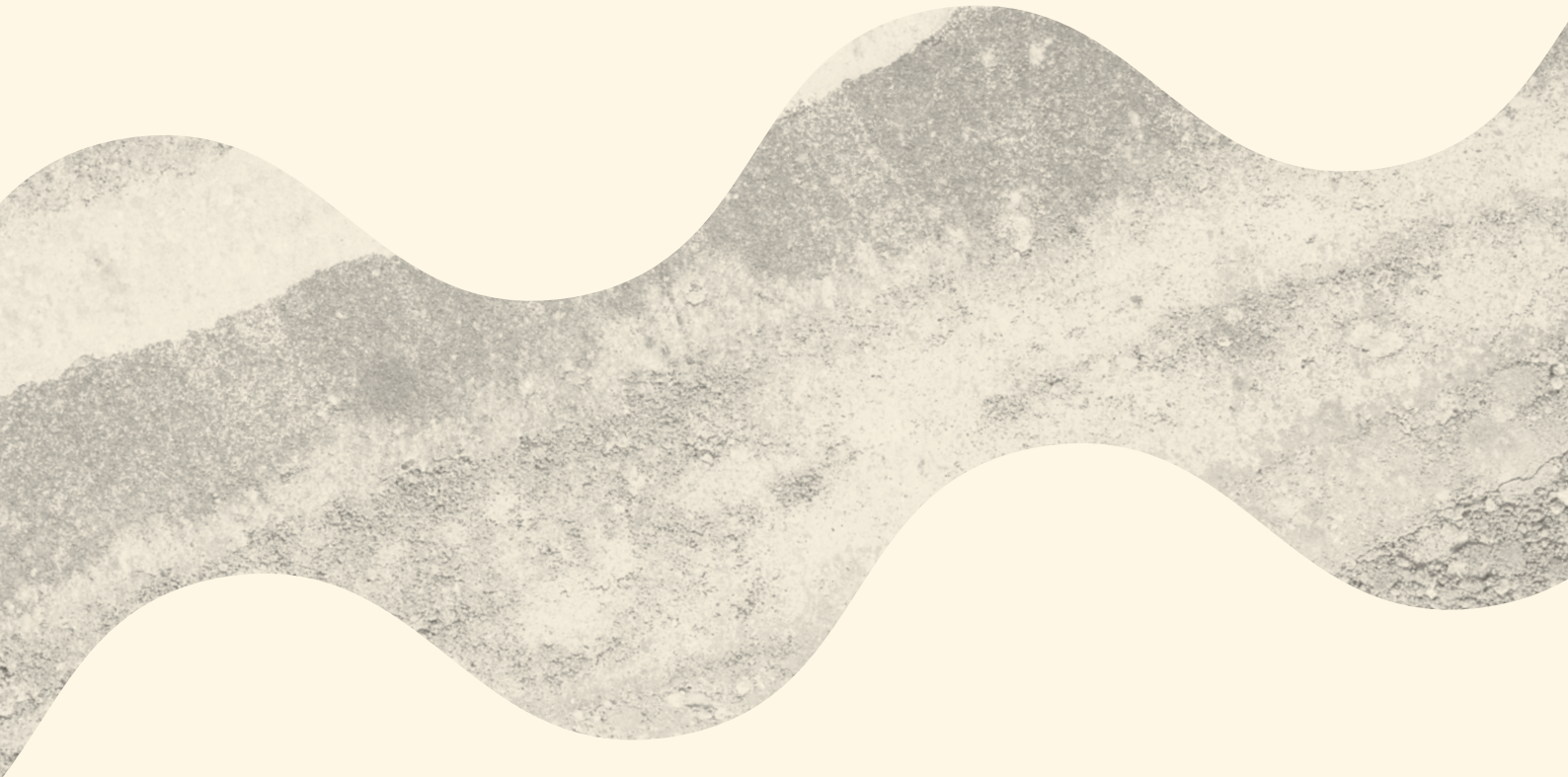


Construction Environmental Management Plan

We'll make sure strict measures are in place to appropriately avoid, minimise and manage impacts to air quality, water and land throughout construction of the Project.

To do this, the contractor appointed to construct Yan Yean Road Upgrade – Stage 2 will be required to prepare a Construction Environmental Management Plan (CEMP) before construction begins.

The CEMP is a detailed project and site-specific plan governing the environmental management of all Project activities in a manner that meets the requirements of all relevant environmental laws, approvals and approval conditions, and the Environmental Management Framework (EMF) and set of Environmental Performance Requirements (EPRs) for monitoring and managing environmental effects during the construction and operation of the upgraded road, as outlined in the EES.



Our commitment

We understand and recognise the value the community places on the local environment. We've developed an Environmental Management Framework (EMF) that provides a transparent and integrated framework for managing the Project's environmental impact.

The EMF establishes Environmental Performance Requirements (EPRs) that set the environmental outcomes that must be achieved during design, construction and operation of the new road.

EPRs have been developed to address the Project's identified impacts and deliver environmental benefits. You can view this as part of the EES documentation available for the Project.

We're committed to preserving the natural environment while we deliver this important and much needed road upgrade.

The road design and construction methodology will be continually re-evaluated and refined with the goal to avoid and minimise impacts on air quality, surface water, groundwater and land contamination as much as possible.

EES Documentation

The EES, including the Air Quality Impact Assessment, Surface Water Impact Assessment, Groundwater Impact Assessment and Contaminated Land Impact Assessment, is available to view and on display for public comment from 31 August to 9 October 2020.

Commenting on the EES gives you a chance to have your views considered as part of the planning approvals decisions for Yan Yean Road Upgrade – Stage 2. You can read the EES on our website. Copies are also available on USB by request.

More Information

For more information about the EES process, where to read the document and how to make a submission visit roadprojects.vic.gov.au/yyr-ees.

For more information about the project, email contact@roadprojects.vic.gov.au or call **1800 105 105**.

Contact us

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