



Population change and transformative projects

About the Company

Transport for NSW is the lead agency of the NSW Transport cluster. Our role is to lead the development of a safe, efficient, integrated transport system that keeps people and goods moving, connects communities and shapes the future of our cities, centres and regions. We are responsible for strategy, planning, policy, regulation, funding allocation and other non-service delivery functions for all modes of transport in NSW, including road, rail, ferry, light rail, point to point, regional air, cycling and walking. Customers are at the centre of everything we do.

Should you be interested in working for us, Transport for NSW offers an Entry Level Talent Program to provide people with the opportunity to join Transport for NSW as a Graduate, Cadet or Scholar. Successful applicants can work across the cluster at Transport for NSW, Sydney Trains, NSW TrainLink, Roads and Maritime Services and State Transit Authority. For more information, visit: <https://www.transport.nsw.gov.au/about-us/careers/how-to-apply/entry-level-talent-programs>.

Project Specifications

Background Information / Problem Statement

In planning for the future transport needs of NSW, Transport for NSW needs to consider the impacts that transformative projects will have on communities and places. Transformative projects are major investment initiatives that are likely to bring about a “step-change” in the way people travel, including how they travel and where they travel to. These projects also influence where populations live and the businesses locate, often inducing growth in some areas due to the increased accessibility. Examples of transformative projects include high speed rail, heavy rail, metro, light rail, and bus rapid transit.

Currently, the NSW Government is working on developing a fast rail network, linking regional centres to each other and to Sydney, with the potential to significantly reduce travel times across NSW. Premier Gladys Berejiklian is seeking a fast rail network to give people greater choice about where they live and how they commute to work. By making regional travel faster, safer and easier it also brings huge economic potential to NSW regional towns and cities by making it easier to invest, do business, build a lifestyle and visit regional areas. Four potential routes have been identified, including a Sydney to Newcastle corridor.

For more information on Fast Rail, please visit: <https://www.nsw.gov.au/improving-nsw/projects-and-initiatives/a-fast-rail-future-for-nsw/>

In order to estimate the potential benefits that a transformative project may bring, one of our responsibilities of Transport for NSW is to quantify the land use and development changes (including population and employment) that could be triggered by a transformative transport project such as Fast Rail¹. This is important because supporting services and infrastructure investment needs to be planned to anticipate growth of people and jobs at a local level. Land use changes may also not be constrained to the immediate walking catchment of the Fast Rail station and can extend further away along high frequency bus routes to areas of higher amenity (e.g. beaches, major retail centres, other transport hubs).

¹ For the purposes of this project, ‘Fast Rail’ is assumed to have maximum operating speed of greater than 200 km/h. For comparison, the fastest train currently operating in NSW is limited to 160 km/h.

Task

Transport for NSW requires the development of a methodology and model to calculate the potential change in population that may occur as a result of a transformative project such as Fast Rail for the Sydney to Newcastle corridor. The methodology and model should be guided by best practice from around the world in how population change is calculated for major infrastructure decisions.

You must also consider these independent variables:

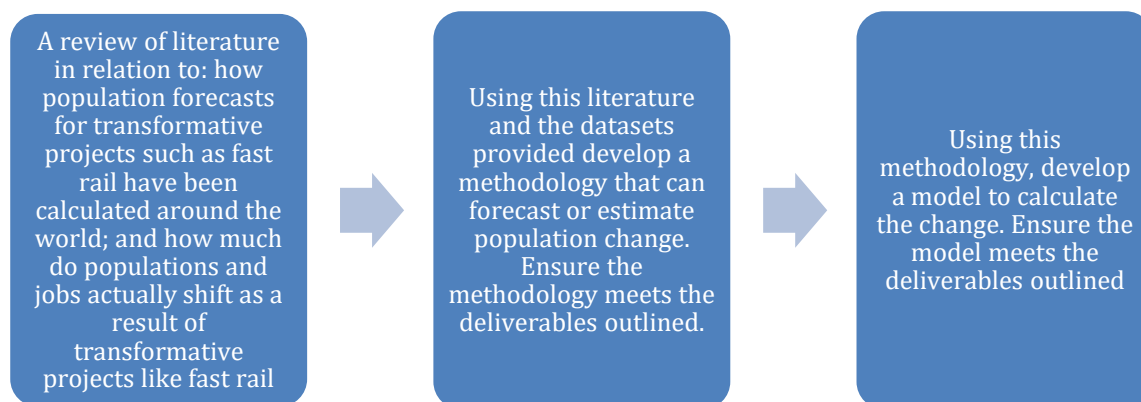
- Peak and off-peak frequency of bus and rail services, including the influence this has on the time spent waiting for service and interchanging between modes (including between bus and rail as well as rail and rail), and
- In-vehicle travel time of bus and rail services.

The following datasets will be provided to help with the development of the methodology and model:

- Public transport data in General Transit Feed Specification (GTFS) – this information feeds public transport trip planning apps.
- Travel Zone Projection 2016 (TZP2016) population projections – this dataset contains the projected population for each travel zone (TZ) for census years from 2016 until 2056. TZs are a standard geography used by TfNSW for demand modelling.
- Hypothetical Sydney to Newcastle corridor fast rail travel times and service frequencies by stopping pattern for a Fast Rail project. For the base case, it is recommended the existing timetable be used.

The GTFS and TZP2016 files are available for public download from Transport for NSW's Open Data Hub and Developer Portal: <https://opendata.transport.nsw.gov.au/>. Other datasets that may be of interest to this project include TZP2016 employment projections.

An approach and requirements to undertake this task are outlined below. How the methodology and model is developed is to be determined by the project team.



Restrictions:

It is noted that this task is being undertaken with the technical support and guidance of TfNSW staff. However, any support provided by TfNSW is only for the purposes of completing the task. This support should not be equated with official endorsement, approval, or acceptance of the methodology or results. The task and any results produced are independent of the NSW Government's planning and policy decision-making on Fast Rail.

Transformative transport projects are very sensitive to public and media scrutiny. To mitigate the data sensitivity risks, the timetable and servicing pattern provided is hypothetical and it is expected only openly available data will be used or made available. However, where any sensitive or proprietary information is provided by TfNSW, project confidentiality is expected to be maintained at all times before, during and after the project has been completed.

Project Deliverables

- Develop a model that considers the impact a transformative project will have on population change by TZ as a result of:
 1. Transformative project frequency;
 2. Travel time, including interchanging between modes; and
 3. Consideration of 1 and 2.

The model can be developed in any format. It is desirable that the model can be operated using (in order of preference):

- common office productivity software such those contained in the Microsoft Office suite,
- industry-standard planning-related software such as ArcGIS,
- or open source software environments such as R,

However, the outputs for items 1, 2 and 3 need to be provided in a spreadsheet listing by individual travel zone:

- Population in 2016 with project; and
- Population in 2056 with project.

The model shall allow of public transport service inputs to be easily modified should they require adjustment as the project develops.

- A report of 15 pages maximum excluding appendices outlining the methodology undertaken and results to consider items 1, 2 and 3, including a review of best practice that guided the development of the methodology and model. This should be provided as docx and pdf files.
- Other Deliverables
 - Boardroom pitch - 15 minute presentation for the project leaders and mentors for immediate feedback on the students' process. This will include a 10 minute Q&A panel.

- Exposition Stall - Students will showcase their project and solutions to a wide range of industry representatives. It is a requirement that your team develops the appropriate mediums to demonstrate your work (presentation slides, posters, infographics)

Resources

Transport for NSW will provide a hypothetical service plan for a fast rail transformative project along the Sydney to Newcastle corridor.

Contact Details:

Project Leader – Ellie Simpson

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Project Leader – Vi Ong

Contact Number: 0431 886 825

Email: vi.ong@transport.nsw.gov.au (preferred)

Availability throughout the week – Both Vi and Ellie work flexibly. To meet or discuss the project, please email and they will respond when available.

Note: Please CC all project supports and stemleadersprogram@gmail.com in all emails regarding the project to ensure everyone is on the same page.