



Transport
for NSW



Data Sharing Specification for the TfNSW Mobility as a Service (MaaS) Innovation Challenge

Document Summary Information		
Version		1.1
Version	Release	26 Aug 2019
Date		
Status		Published
Document Name		TfNSW MaaS Data Sharing Specification_v1.1
Document Owner		Open Data and Innovation



Version History

Version	Date	Comments	Author
1.0	07/06/2019	Published version	Terence Khoo
1.1	26/08/2019	Minor updates to the datetime format in the trip and leg table Indicate that the zone data must be travel zone code for NSW operators.	Terence Khoo

Table of Content

1	Overview.....	5
1.1	Purpose.....	5
1.2	Background.....	5
1.3	Scope.....	6
1.4	References.....	6
1.5	Abbreviations and Acronyms.....	6
2	Governance.....	7
2.1	NSW Government Open Data Policy.....	7
2.2	Data Privacy and Security.....	7
3	Requirements.....	8
3.1	Data flow.....	8
3.2	File name.....	8
3.3	File format.....	8
3.4	File transfer.....	8
3.5	Frequency.....	8
3.6	Invalid or unreadable file.....	8
3.7	Validator.....	9
3.8	Reference Tables.....	9
3.9	Files.....	9
2.9.1	Examples and use cases.....	10
4	Historical Data Specification.....	12
4.1	Schema.....	12
4.2	Trip.....	13
4.3	Leg.....	14
4.4	Trip Plan.....	16
4.5	Trip Plan Option.....	18
4.6	Trip Plan Booking.....	19
4.7	Vehicle.....	19
4.8	Vehicle Service.....	20
4.9	Vehicle Trip.....	21
4.10	Vehicle Utilisation.....	21
4.11	Bookings.....	21
4.12	High level stats.....	23



4.13 High level stats – Zone	24
4.14 Apps stats.....	26
4.15 Reference Tables	27
4.15.1 Travel Zone.....	27
4.15.2 Route Type	27
4.15.3 Wheelchair Accessible	27
4.15.4 Ticket Type	28
4.15.5 Payment Type.....	28
4.15.6 Vehicle Type	28
4.15.7 Operator.....	29
4.15.8 Application	29
4.15.9 Vehicle Service Hour.....	29
4.16 Default value	31
5 Data Feeds	32
5.1 GTFS and GTFS Realtime	32
5.2 Vehicle information (Realtime).....	32
5.2.1 File Requirement.....	32
5.2.2 File name	32
5.2.3 File transfer	33
5.2.4 Frequency.....	33
5.2.5 Specification.....	33
5.3 GBFS	35

1 Overview

1.1 Purpose

This document is a data sharing specification for participants in the TfNSW Mobility as a Service (MaaS) Innovation Challenge with Transport for NSW (TfNSW).

Firstly, it sets out the specifications for participants in the MaaS Innovation Challenge to provide TfNSW with historical data for analysis and future planning purposes. The data will give TfNSW an overview and understanding of the broader transport network and customers' preference for selecting the best options for their trips.

Secondly, it sets out the specifications for participants to share their General Transit Feed Specification (GTFS), General Transit Feed Specification Realtime (GTFS Realtime), General Bikeshare Feed Specification (GBFS), and realtime vehicle information with TfNSW. With consent of participants, TfNSW may explore publishing these data feeds via Open Data Hub for products to ingest and provide trip planning and trip update functionalities.

1.2 Background

As the first Government Transport accelerator model of its kind in the world, the Future Transport Digital Accelerator facilitates direct collaboration between the public and private sectors, connecting teams from the NSW Transport cluster with industry, researchers, entrepreneurs and start-ups in the digital space. Launched in June 2018, the TfNSW MaaS Innovation Challenge is the first challenge run by the Future Transport Digital Accelerator.

As part of the MaaS Innovation Challenge, transport industry players were invited to propose innovative solutions and products to give customers optimal door-to-door mobility service options and seamless combinations with the option to plan, book and pay. TfNSW then selected successful participants to trial their MaaS solutions in a trial program.

MaaS is a model that enables customers to plan, book, and pay for their transport journey using a range of services via a single user interface, such as a mobile phone app. MaaS has the potential to enable customers to access integrated, easy-to-understand journeys in a broad market of transport services. In a fully operational service model, a MaaS provider could sell seamless multimodal journeys, offer convenient payment methods such as subscription services, and communicate directly with customers.

MaaS relies on sharing real time information across different transport service providers to help customers optimise their journey through a single MaaS provider. It enables customers to plan, book, and pay for their end-to-end journey through a retailer (most likely via an app), choosing from a range of travel options, such as travelling by public transport, rideshare or bike share services. The app will also be able to guide the customer through their journey.

Data sharing between operators is an essential feature of a MaaS ecosystem. This specification sets a standard for sharing of data by participants with TfNSW for the purposes of the MaaS Innovation Challenge.

1.3 Scope

This document covers the following scope of work:

1. File transfer and frequency
2. Requirements and validation
3. Historical data definition
4. GTFS, GTFS Realtime, GBFS and Vehicle information (Realtime)

TfNSW welcomes feedback and suggestions to the above mentioned scope of work, and will work towards an industry agreed specification. The feedback and suggestions will be discussed and incorporated into future versions of the document.

1.4 References

Document Name	Version
Operator Self-Reporting Interface Specification For On Demand Transport Services Contract (ODTSC)	1.5
TfNSW GTFS & GTFS R Implementation Specification	0.7

1.5 Abbreviations and Acronyms

Abbreviations/Acronyms	Definition
API	Application Programming Interface
App	Application
AWS	Amazon Web Services
GBFS	General Bikeshare Feed Specification
GTFS	General Transit Feed Specification
GTFS-R or GTFS-Realtime	General Transit Feed Specification Realtime
Lat	Latitude
Lon	Longitude
MaaS	Mobility-as-a-Service
NSW	New South Wales
ODI	Open Data and Innovation (Team within Transport for NSW)
S3	Simple Storage Service
TfNSW	Transport for NSW
TPA	Transport Performance and Analytics
TZ	Travel Zone

2 Governance

2.1 NSW Government Open Data Policy

The NSW Government has an open data policy to promote data sharing with the community. It encourages the community to share their data to enable a better outcome for the customers. The objectives of this policy are to assist NSW Government agencies to:

- release data for use by the community, research, business and industry
- accelerate the use of data to derive new insights for better public services
- embed open data into business-as-usual
- use data to inform the design of policy, programs and procurement
- support the use of data by the NSW Data Analytics Centre for research and evidence-based decision making
- advance citizen engagement with government and the work of government
- support the *Government Information (Public Access) Act 2009* (NSW) (GIPA Act) and promote simple and efficient compliance with the requirements set out in that Act

Further information can be found at: <https://www.digital.nsw.gov.au/policy/data-information/making-data-open/nsw-open-data-policy>

2.2 Data Privacy and Security

The *Privacy and Personal Information Protection Act 1998* (PPIP Act) and the *Health Records and Information Privacy Act 2002* (HRIP Act) outlines privacy principles which NSW public sector agencies must comply with when handling personal and health information. These principles cover the complete life cycle from collection through to disposal. They include obligations with respect to data security, data quality and how information may be collected, used and disclosed.

TfNSW is committed to protecting the privacy of customer's personal and health information. For further information please see TfNSW's [Privacy Management Plan](#).

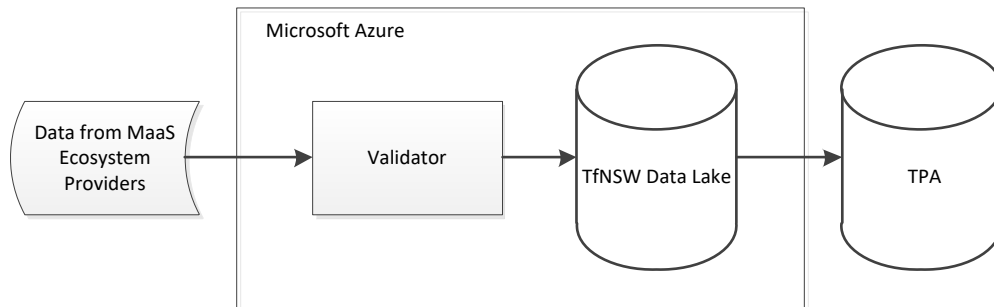
Developers must comply with privacy legislation and not do any act or engage in any practice which, if done by TfNSW, would constitute a breach of privacy legislation.

Further information about the how TfNSW will maintain privacy and security in open data can be found at: <https://opendata.transport.nsw.gov.au/maintaining-privacy-and-security-open-data>

3 Requirements

3.1 Data flow

The files will be uploaded or transferred from participants' servers into the TfNSW Data Lake before any data transfer to TPA database. There is a validator which will validate the file and data before the data is loaded in TfNSW Data Lake. The below diagram depicts the data flow where there is no error/issue with the file and data.



3.2 File name

There are restrictions on the file naming convention. The filename has to be kept the same throughout the period. If there is any change in the filename, the ODI team should be notified.

The file naming convention is <operator name-filename-yyyyMMddTHHmss>
e.g. TfNSW-Trip-20190106T110030 or TfNSW-Leg-20190106T103025

3.3 File format

The allowed file format is CSV. The delimiters in a CSV file must be commas, and when a text value happens to contain a comma, that value (column) must be encased in double quotes.

3.4 File transfer

The file is to be uploaded into TfNSW Data Lake. Each data provider will be provided with access to TfNSW Azure environment. The storage space will be managed such that different data provider will not be able to see other providers' data.

3.5 Frequency

We expect the file to be uploaded on a daily basis or other agreed frequencies to TfNSW. The data can be one day old or historical data.

3.6 Invalid or unreadable file

The file will be checked and validated when it is transferred to TfNSW. There should be an alert triggered from the MaaS ecosystem provider (MaaS provider and transport operator) if the error occurred at the file transfer between the MaaS ecosystem provider server and TfNSW.

Data Providers should re-upload and replace the invalid or unreadable file once notified of such error.

Open Data Help (opendatahelp@transport.nsw.gov.au) should be notified of any invalid file issues.

3.7 Validator

A validator will be built to validate the file and data according to the requirements and data specification mentioned in this document before storing in TfNSW Data Lake. Any errors detected will be provided as feedback to the provider of the file to rectify.

3.8 Reference Tables

The reference data values must be used when providing the data to TfNSW.

- Travel Zone
- Route Type
- Wheelchair Accessible
- Ticket Type
- Payment Type
- Vehicle Type
- Operator
- Application
- Vehicle Service Hour

There may be future changes to the values in the data reference table. Refer to the following website for the latest data reference table.

<https://opendata.transport.nsw.gov.au/dataset/reference-tables-maaS-data-sharing-specification>

3.9 Files

Below describes the files which were expected from MaaS ecosystem providers. Not all files are mandatory. However, if you are providing the file, there are some mandatory fields which you should provide.

Filename	Defines
Trip.csv	Describes the trip or journey of the customer.
Leg.csv	Describes the leg/s of the customer's trip.
TripPlan.csv	For trip planning product to describe customers' trip plan.
TripPlanOption.csv	Describes the customers' viewed trip options during trip planning.
TripPlanBooking.csv	Describes the booking events during trip planning.
Vehicle.csv	Describes the vehicle used for passenger service.
VehicleService.csv	Describes the service information of the vehicle i.e. vehicle shift while it is in operation.
VehicleTrip.csv	Mapping between vehicle shift and trip_id that is used within the GTFS feed.
VehicleUtilisation.csv	Describes the utilisation rate for the vehicle during the service period.
Bookings.csv	Describes the bookings for each operator.
HighLevelStats.csv	For MaaS ecosystem provider to indicate the plan, book, take statistics from the customers' journey perspective

HighLevelStats_Zones.csv	Indicates the top 100 zones which the customers are travelling.
AppStats.csv	For MaaS ecosystem provider to indicate the statistics of their product.

2.9.1 Examples and use cases

Below are the use cases and files for different type of providers. The providers are to provide the files which they have data. Not all files are mandatory for the providers.

1) Trip planning app

A customer uses an app to plan for a trip. The customer enters origin and destination. The customer views the returned results of the trip plan, and begins exploring the options. The app records the viewed option. The customer books the transport services through the app and the transport service returns a status of the booking.

- a) TripPlan.csv
- b) TripPlanOption.csv
- c) TripPlanBooking.csv
- d) HighLevelStats.csv
- e) AppStats.csv
- f) HighLevelStats_Zones.csv

2) Transport service providers and operators

A transport service provider receives a booking from a customer. The provider dispatch vehicle to pick up the customer. The driver records the assignment information and utilisation rate of the vehicle.

- a) Bookings.csv
- b) Vehicle.csv
- c) VehicleService.csv
- d) VehicleTrip.csv
- e) VehicleUtilisation.csv

3) Plan, book and pay app

A customer uses an app to plan for a trip. The customer enters origin and destination. The customer views the returned results of the trip plan, and begins exploring the options. The app records the viewed option. The customer books the transport services through the app and the transport service returns a status of the booking. The customer uses the app to navigate and pay for different legs of the trip.

- a) TripPlan.csv
- b) TripPlanOption.csv
- c) TripPlanBooking.csv
- d) Trip.csv
- e) Leg.csv
- f) HighLevelStats.csv

- g) HighLevelStats_Zones.csv
- h) AppStats.csv

4) Operator who has their vehicle fleet and app to plan, book and pay

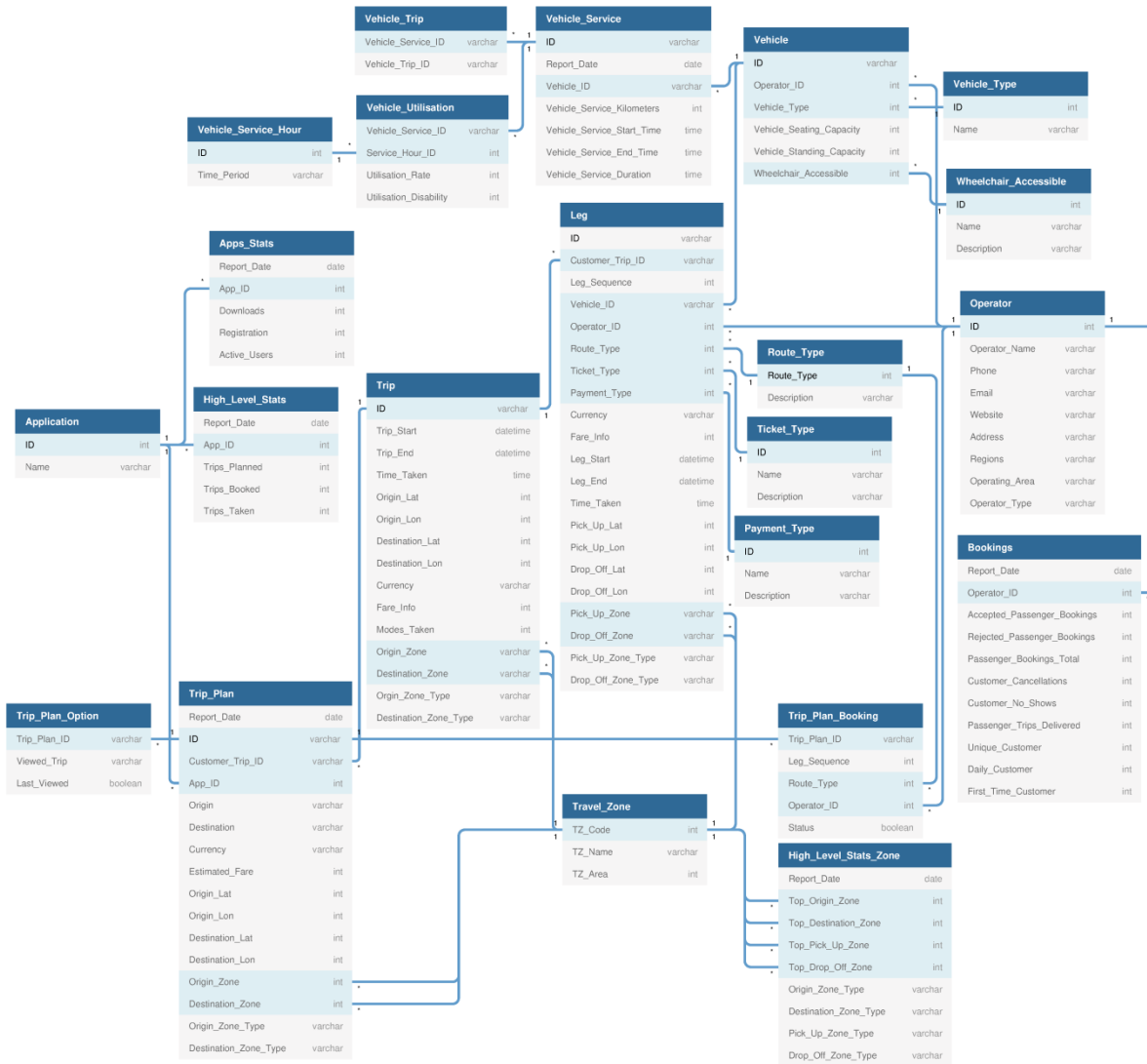
A customer uses an app to plan for a trip. The customer enters origin and destination. The customer views the returned results of the trip plan, and begins exploring the options. The app records the viewed option. The customer books the transport services through the app and the transport service returns a status of the booking. The customer uses the app to navigate and pay for different legs of the trip.

A transport service provider receives a booking from a customer. The provider despatch vehicle to pick up the customer. The driver records the assignment information and utilisation rate of the vehicle.

- a) TripPlan.csv
- b) TripPlanOption.csv
- c) TripPlanBooking.csv
- d) Trip.csv
- e) Leg.csv
- f) HighLevelStats.csv
- g) HighLevelStats_Zone.csv
- h) AppStats.csv
- i) Bookings.csv
- j) Vehicle.csv
- k) VehicleService.csv
- l) VehicleTrip.csv
- m) VehicleUtilisation.csv

4 Historical Data Specification

4.1 Schema



4.2 Trip

This file is used to describe the customer's trip from point A to point B. The data provided must reflect known customer journey throughout the entire trip.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
ID	String	AAAAAA	64	M	ID of the customer's trip. This ID should be preceded with Operator ID or Application ID.	900000-0001
Trip_Start	Datetime	yyyy-mm-ddThh:mm:ss+ -hh:mm	20	M	Trip start date and time. This value is according to ISO 8601 format.	2019-02-15T15:53:00+10:00
Trip_End	Datetime	yyyy-mm-ddThh:mm:ss+ -hh:mm	20	M	Trip end date and time. This field value is according to ISO 8601 format.	2019-02-15T16:53:15+10:00
Time_Taken	Time	HH:mm:ss	8	O	Time taken to complete whole trip.	01:05:00
Origin_Lat	Numeric	-NN.NNNNNN	10	O	The latitude for the origin of the trip. The field value must be valid WGS 84 latitude.	-31.840233
Origin_Lon	Numeric	NNN.NNNNNN	10	O	The longitude for the origin name of the trip. The field value must be valid WGS 84 latitude.	145.612793
Destination_Lat	Numeric	-NN.NNNNNN	10	O	The latitude for the destination name of the trip. The field value must be valid WGS 84 latitude.	-31.840233
Destination_Lon	Numeric	NNN.NNNNNN	10	O	The longitude for the destination of the trip. The field value must be valid WGS 84 latitude.	145.612793
Currency	String	NNN	3	O	The currency used for the fare payment. This value must be populated according to the codes defined in ISO 4217.	AUD
Fare_Info	Numeric	NNNNN	20	O	Total fare in cents for the whole trip. This includes any service fee that is being collected	440

					from the customer.	
Modes_Taken	Numeric	N	1	M	The number of modes taken for the whole trip.	2
Origin_Zone	String	AAAAAA	50	M	The defined zone of the origin. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field. For NSW, the travel zone code of the origin. Refer to section 4.15.1 for the values.	4RRH4694+M F
Destination_Zone	String	AAAAAA	50	M	The defined zone of the destination. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field. For NSW, the travel zone code of the destination. Refer to section 4.15.1 for the values.	4RRH4694+M F
Origin_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the origin zones.	Travel Zone
Destination_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the destination zones.	Travel Zone

Note: M/O/D: Mandatory/Optional/Defined

4.3 Leg

This file is used to describe the legs of each customer's trip.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
ID	String	AAAAAA	64	M	ID of the leg. This ID should be preceded with Operator ID or Application ID.	900000-0001
Customer_Trip_ID	String	AAAAAA	64	M	ID of the referenced customer's trip.	900000-0001
Leg_Sequence	Numeric	NNN	3	M	Leg sequence of the trip. The leg	0

					sequence will start at 0.	
Vehicle_ID	String	AAAAAA	64	O	ID of the referenced vehicle.	ODI 10 DT
Operator_ID	Numeric	NNNNNN	6	M	ID of the operator. Refer to 4.15.7 for the values.	1
Route_Type	Numeric	NNN	3	M	The route type that describes the type of transportation for the leg. Refer to section 4.15.2 for the values.	700
Ticket_Type	Numeric	N	1	O	The ticket type for the leg. Refer to section 4.15.4 for the values.	1
Payment_Type	Numeric	N	1	O	This is the payment type for the leg. Refer to section 4.15.5 for the values.	1
Currency	String	NNN	3	O	The currency used for the fare payment. This value must be populated according to the codes defined in ISO 4217.	AUD
Fare_Info	Numeric	NNNNN	20	O	Total fare in cents for the leg. This includes any service fee that is being collected from the customer.	220
Leg_Start	Datetime	yyyy-mm-ddThh:mm:ss+ -hh:mm	20	M	Leg start date and time. This value is according to ISO 8601 format.	2019-02-15T15:53:00+10:00
Leg_End	Datetime	yyyy-mm-ddThh:mm:ss+ -hh:mm	20	M	Leg end date and time. This field value is according to ISO 8601 format.	2019-02-15T16:53:15+10:00
Time_Taken	Time	HH:mm:ss	8	M	Time taken for the leg.	00:50:39
Pick_Up_Lat	Numeric	-NN.NNNNNN	10	O	The latitude for the pick-up point of the leg. The field value must be valid WGS 84 latitude.	-31.840233
Pick_Up_Lon	Numeric	NNN.NNNNN N	10	O	The Longitude for the pick-up point of the leg. The field value must be valid WGS 84 longitude.	145.612793

Drop_Off_Lat	Numeric	-NN.NNNNNN	10	O	The latitude for the drop off point of the leg. The field value must be valid WGS 84 latitude.	-31.840233
Drop_Off_Lon	Numeric	NNN.NNNNN N	10	O	The Longitude for the drop off point of the leg. The field value must be valid WGS 84 longitude.	145.612793
Pick_Up_Zone	String	AAAAAA	50	M	The defined zone of the pick-up. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field. For NSW, the pick-up point travel zone code of the leg. Refer to Section 4.15.1 for the values.	4RRH4694+MF
Drop_Off_Zone	String	AAAAAA	50	M	The defined zone of the drop off. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field. For NSW, the drop off point travel zone code of the leg. Refer to Section 4.15.1 for the values.	4RRH4694+MF
Pick_Up_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the pick up zones.	Travel Zone
Drop_off_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the drop off zones.	Travel Zone

Note: M/O/D: Mandatory/Optional/Defined

4.4 Trip Plan

This file is for trip planning product to describe customers' trip plan.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
Report_Date	Date	yyyyMMdd	8	M	Date of the report.	20181129
ID	String	AAAAAA	64	M	ID of the trip plan. This ID should be preceded with Operator ID or Application ID.	900000-0001
Customer_Trip_ID	String	AAAAAA	64	O	ID of the referenced customer's trip.	900000-0001
App_ID	Numeric	NNNNNN	6	M	ID of the Application. Refer to Section 4.15.8 for the values.	001
Origin	String	AAAAAA	100	O	Text of the origin which the customers searched for. This value can be "Current Location".	Manly Wharf, Manly
Destination	String	AAAAAA	100	O	Text of the destination which the customers searched for. This value can be "Current Location".	Circular Quay, Sydney
Currency	String	NNN	3	O	The currency used for the fare payment. This value must be populated according to the codes defined in ISO 4217.	AUD
Estimated_Fare	Numeric	NNNNN	20	O	The estimated fare in cents for the whole trip. This includes any service fee that will be collected from the customer.	440
Origin_Lat	Numeric	-NN.NNNNNN	10	O	The latitude for the origin of the trip. The field value must be valid WGS 84 latitude.	-31.840233
Origin_Lon	Numeric	NNN.NNNNN N	10	O	The longitude for the origin name of the trip. The field value must be valid WGS 84 latitude.	145.612793
Destination_Lat	Numeric	-NN.NNNNNN	10	O	The latitude for the destination name of the trip. The field value must be valid WGS 84 latitude.	-31.840233
Destination_Lon	Numeric	NNN.NNNNN N	10	O	The longitude for the destination of the trip. The field value must be valid WGS 84 latitude.	145.612793
Origin_Zone	String	AAAAAA	50	M	The defined zone of the origin. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field.	4RRH4694+MF

					For NSW, the travel zone code of the trip plan origin. Refer to Section 4.15.1 for the values.	
Destination_Zone	String	AAAAAA	50	M	The defined zone of the destination. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field. For NSW, The travel zone code of the trip plan destination. Refer to Section 4.15.1 for the values.	4RRH4694+MF
Origin_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the origin zones.	Travel Zone
Destination_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the destination zones.	Travel Zone

Note: M/O/D: Mandatory/Optional/Defined

4.5 Trip Plan Option

This file is used to describe the customers' viewed trip options during trip planning.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
Trip_Plan_ID	String	AAAAAA	64	M	ID of the referenced trip plan.	900000-0001
Viewed_Option	String	NNNN-NNNN-	19	M	The viewed option of a trip plan by route type. These are the combination of route types which the customers take to complete the whole trip. Refer to section 4.15.2 for the route type values.	700-109-1604
Last_Viewed	Boolean	N	1	M	This field is to determine if this option is the last viewed by the customer. 1: True 0: False	1

Note: M/O/D: Mandatory/Optional/Defined

4.6 Trip Plan Booking

Some trip planning app provides the capability of booking the services for certain legs of the trip. This file is used to describe such booking events.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
Trip_Plan_ID	String	AAAAAA	64	M	ID of the referenced trip plan.	900000-0001
Leg_Sequence	Numeric	NNN	3	M	Leg sequence of the trip. The leg sequence will start at 0.	0
Route_Type	Numeric	NNN	3	M	The route type that describes the type of transportation for the leg. Refer to Section 4.15.2 for the values.	700
Operator_ID	Numeric	NNNNNN	6	M	ID of the operator. Refer to Section 4.15.7 for the values.	900080
Status	Boolean	N	1	M	This field is to determine if the booking of the service is successful or failure. 1: Success 0: Fail	1

Note: M/O/D: Mandatory/Optional/Defined

4.7 Vehicle

This file is used to describe the vehicle that was used or despatched by each operator to carry passengers.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
ID	String	AAAAAA	64	M	ID of the vehicle. This can be the vehicle registration ID of the vehicle or fleet number.	ODI 10 DT
Operator_ID	Numeric	NNNNNN	6	M	ID of the operator. Refer to Section 4.15.7 for the values.	900080

Vehicle_Type	Numeric	N	1	M	Type of the vehicle. Refer to Section 4.15.6 for the values.	1
Vehicle_Seating_Capacity	Numeric	NNN	3	M	This is the total seating capacity in the vehicle. This figure should include the driver.	12
Vehicle_Standing_Capacity	Numeric	NNN	3	M	This is the total standing capacity in the vehicle For vehicle with no standing, this value is 0.	12
Wheelchair_Accessible	Numeric	N	1	M	Indicates if there is accessibility information for the vehicle. Refer to section 4.15.3 for the values.	1

Note: M/O/D: Mandatory/Optional/Defined

4.8 Vehicle Service

This file is used to describe the service information of the vehicle i.e. vehicle shift while it is in operation. An operator may despatch the same vehicle more than 1 time per day.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
ID	String	AAAAAA	64	M	ID of the vehicle service shift. This ID should be preceded with Operator ID or Application ID.	900000-0001
Report_Date	Date	yyyyMMdd	8	M	Date of the report.	20181129
Vehicle_ID	String	AAAAAA	64	M	ID of the referenced vehicle.	ODI 10 DT
Vehicle_Service_Kilometers	Numeric	NNN	3	O	The total number of kilometres travelled by the vehicle while it is in operation.	100
Vehicle_Service_Start_Time	Time	HH:mm:ss	8	O	Start time for the service.	10:09:56
Vehicle_Service_End_Time	Time	HH:mm:ss	8	O	End time for the service.	11:00:35
Vehicle_Service_Duration	Time	HH:mm:ss	8	O	Duration for the service.	01:05:00

Note: M/O/D: Mandatory/Optional/Defined

4.9 Vehicle Trip

This file is used to describe the mapping between vehicle service and trip_id that is used within the GTFS feed or trip that is used within the GTFS Realtime feed.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
Vehicle_Service_ID	String	AAAAAA	64	M	ID of the referenced vehicle service.	900000-0001
Vehicle_Trip_ID	String	AAAAAA	26	M	This value referenced from the trip_id that is used within the GTFS feed or trip that is used within the GTFS Realtime feed.	1.AA51.1-SC0-1-sj2-2.1.R

Note: M/O/D: Mandatory/Optional/Defined

4.10 Vehicle Utilisation

This file is used to describe the utilisation rate for the vehicle that was used to ferry passengers.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
Vehicle_Service_ID	String	AAAAAA	64	M	ID of the referenced vehicle service.	900000-0001
Service_Hour_ID	Numeric	NNNN	4	M	The service period for reporting. Refer to 4.15.9 for the values.	0100
Utilisation_Rate	Numeric	NNN	3	M	The utilisation rate, in percentage, of the vehicle. This figure includes the driver.	75
Utilisation_Disability	Numeric	NN	2	O	The occupancy number of people with disability.	2

Note: M/O/D: Mandatory/Optional/Defined

4.11 Bookings

This file is used to describe the bookings and passenger trip delivery for each operator during a 24 hours period from 12.00am to 11.59pm. It should contain data of the completed trips only. Any trips that roll over to the next day shall be computed in the next day.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
Report_Date	Date	yyyyMMdd	8	M	Date of the report.	20181129
Operator_ID	Numeric	NNNNNN	6	M	ID of the operator. Refer to 4.15.7 for the values.	1

Accepted_Passenger_Bookings	Numeric	NNN	3	M	The total number of passenger trips requested by customers where the operator accepts the booking and plans to fulfil the trip.	123
Rejected_Passenger_Bookings	Numeric	NNN	3	M	The total number of passenger trips requested by customers where the operator declines the booking and promptly notifies that it won't fulfil the trip.	123
Passenger_Bookings_Total	Numeric	NNN	3	M	The total number of passenger trips requested by customers, including both accepted and rejected passenger bookings.	123
Customer_Cancellations	Numeric	NNN	3	M	The total number of passenger trips requested by customers, that are accepted bookings by the operator, but the customer subsequently cancels the trip.	123
Customer_No_Shows	Numeric	NNN	3	M	The total number of passenger trips requested by customers, that are accepted bookings by the operator, but the customer was not at the pick-up location when service vehicle arrived at/after scheduled pick-up time.	123
Passenger_Trips_Delivered	Numeric	NNN	3	M	The total number of passenger trips requested by customers that are accepted bookings by the operator, and are successfully delivered. Customer Cancellations and Customer No Shows are not to be included in this total.	123

Unique_Customer	Numeric	NNN	3	M	The total number of unique customers who used the service for the day. Customers who used the service twice on the day should be counted as one in this field.	123
Daily_Customer	Numeric	NNN	3	M	The total number of customers who used the service for the day. Customers who used the service twice on the day should be counted as two in this field.	246
First_Time_Customer	Numeric	NNN	3	M	The total number of first time or new customers who used the service for the day. This figure is not cumulative from previous days.	52

Note: M/O/D: Mandatory/Optional/Defined

4.12 High level stats

This file is used to indicate the statistics for each product from the customers' journey perspective during a 24 hours period from 12.00am to 11.59pm. It should contain data of the completed trips only. Any trips that roll over to the next day shall be computed in the next day.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
Report_Date	Date	yyyyMMdd	8	M	Date of the report.	20181129
App_ID	Numeric	NNNNNN	6	M	ID of the Application. Refer to Section 4.15.8 for the values.	001
Trips_Planned	Numeric	NNNNNNN	7	M	A high level statistics of the number of trips planned i.e. the number of times the customers used the product to plan their trips.	12345
Trips_Booked	Numeric	NNNNNNN	7	O	A high level statistics of the number of trips booked. Scenario: <ul style="list-style-type: none"> If the customers managed to book any leg of the trip, that trip is counted as one booking. If the customers booked a day travel pass, 	1234

					<p>that trip is counted as one booking.</p> <ul style="list-style-type: none"> • If the customers booked a 5-day travel pass, the count for that booking is 5. • For subscription model, it will be according to the number of days the pass can be used. 	
Trips_Taken	Numeric	NNNNNNN	7	O	<p>A high level statistics of the number of trips taken. This is the count of customer trips taken in a day. The operators decide what constitute of a trip e.g. for subscription model, the operator may want to count trips taken in one day trip as one trip taken by the customer.</p>	1000

Note: M/O/D: Mandatory/Optional/Defined

4.13 High level stats – Zone

This file is used to indicate the top customers' journey zones during a 24 hours period from 12.00am to 11.59pm. It should contain data of the completed trips only. Any trips that roll over to the next day shall be computed in the next day.

Name	Type	Format/Units	Max chars	M/O/D	Description	Example
Report_Date	Date	yyyyMMdd	8	M	Date of the report.	20181129
Top_Origin_Zone	String	AAAAAA	50	O	<p>The top 100 origin zone sorted from highest to lowest. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field.</p> <p>For NSW, top 100 origin travel zone code. Refer to Section 4.15.1 for the values..</p>	4RRH4694+MF
Top_Destination_Zone	String	AAAAAA	50	O	<p>The top 100 destination zone sorted from highest to lowest. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field.</p>	4RRH4694+MF

					For NSW, top 100 destination travel zone code. Refer to Section 4.15.1 for the values.	
Top_Pick_Up_Zone	String	AAAAAA	50	O	The top 100 pick-up zone sorted from highest to lowest. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field. For NSW, top 100 pick-up travel zone code. Refer to Section 4.15.1 for the values.	4RRH4694+MF
Top_Drop_off_Zone	String	AAAAAA	50	O	The top 100 drop off zone sorted from highest to lowest. This can be zip code, Google plus codes, or name of suburb. The local jurisdiction should define one type of data for this field. For NSW, top 100 drop off travel zone code. Refer to Section 4.15.1 for the values.	4RRH4694+MF
Origin_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the origin zones.	Travel Zone
Destination_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the destination zones.	Travel Zone
Pick_Up_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the pick up zones.	Travel Zone
Drop_Off_Zone_Type	String	AAAAAA	50	M	The type of zone that is being used to define the drop off zones.	Travel Zone

Note: M/O/D: Mandatory/Optional/Defined

4.14 Apps stats

This file is for MaaS ecosystem providers' product to indicate the number of downloads, user registrations and active users per day.

Name	Type	Format/Units	Max Chars	M/O/D	Description	Example
Report_Date	Date	yyyyMMdd	8	M	Date of the report.	20181129
App_ID	Numeric	NNNNNN	6	M	ID of the Application. Refer to Section 4.15.8 for the values.	001
Downloads	Numeric	NNNN	4	M	The number of download events/app unit for the day.	1000
Registration	Numeric	NNNN	4	O	The number of users who register during the day.	1000
Active_Users	Numeric	NNNN	4	O	The number of active users for the day.	1000

Note: M/O/D: Mandatory/Optional/Defined

4.15 Reference Tables

Refer to the following website for the latest data reference tables.

<https://opendata.transport.nsw.gov.au/dataset/reference-tables-maas-data-sharing-specification>

4.15.1 Travel Zone

The provided data should be mapped to travel zone 2016 as defined in the following site.

<https://opendata.transport.nsw.gov.au/dataset/travel-zones-2016>

Note: This is only applicable to NSW.

4.15.2 Route Type

The table below list the values to be used for route type. This describes the type of service for the route. ONLY the listed values are to be used.

Route Type	Description	Examples
103	Inter Regional Rail Service	Intercity Trains Network
106	Regional Train Service	Regional Trains Network
109	Suburban Railway	Sydney Trains Network
200	Coach Service	Temporary coaches e.g. tour bus services
204	Regional Coach Service	Regional Coach Network
401	Metro Service	Sydney Metro Network
700	Bus Service	Bus Service
708	Mobility Service	Community Transport Service
711	Shuttle Bus	Shuttle Bus Service
712	School Bus	School buses
714	Rail Replacement Bus Service	Bus services to replace train services.
715	Demand and Responsive Bus Service	On-demand services e.g. Bridj
900	Tram Service	Sydney light rail service or Newcastle light rail service.
1000	Water Transport Service	Cruise or ferry to other states
1008	Local Passenger Ferry Service	Sydney Ferries Network or on-demand ferry services
1100	Air Service	Air travel e.g. domestic or international flights
1500	Taxi Service	Taxi services e.g. 13CABS
1506	Private Hire Service Vehicle	Uber or UberPool services
1600	Self Drive	Personal car or personal bicycle
1601	Hire Car	Rented car
1604	Hire Cycle	Lime Bike or Mobike or Scooter
1700	Miscellaneous Service	Walk

4.15.3 Wheelchair Accessible

The table below list the values to be used for wheelchair accessibility. ONLY the listed values are to be used.

ID	Name	Description
0	No info	Indicates that there is no accessibility information for the trip.
1	Yes	Indicates that the vehicle being used on this particular trip can accommodate at least one rider in a wheelchair.
2	No	Indicates that no riders in wheelchairs can be accommodated on this trip.

4.15.4 Ticket Type

The table below list the values to be used for ticket type. ONLY the listed values are to be used.

ID	Name	Description
1	Adult	Fare paid according to adult ticket fare. It is for customers 16 years of age and over who normally pay full fares.
2	Child/Youth	Fare paid according to child/youth ticket fare. It is for children aged 4 – 15 years (inclusive).
3	Gold	Fare paid according to gold ticket fare. This is applicable to Opal fares.
4	Concession	Fare paid according to concession ticket fare.
5	School	Fare paid according to school ticket fare. It is for eligible school students.
6	Free	Fare paid according to free ticket fare.
7	Fixed	Fixed fare. It is for operators who only have one fixed fare for all customers.
8	Integrated	Fare that is included in partners tickets. E.g. Ferry ticket and Zoo ticket combined as one ticket.
9	Others	Other fare type.

4.15.5 Payment Type

The table below list the values to be used for payment type. ONLY the listed values are to be used.

ID	Name	Description
1	Free	No payment. Free of charge.
2	Opal	Fare payment conducted via Opal Card.
3	Credit card	Fare payment conducted via Credit or Debit Card.
4	Cash	Fare payment conducted via cash payment.
5	Paypal	Fare payment conducted via Paypal.
6	Subscription	Fare payment conducted via subscription.
7	Mobile payment	Fare payment conducted via Mobile Payments. E.g. QR Code, WeChat Pay, Alipay.
8	Bank transfer	Fare payment conducted via bank transfer.
9	Gift card or voucher	Fare payment conducted via gift card or voucher.
10	Digital currency	Fare payment conducted via digital currency. E.g. Bitcoin.
11	Others	Other payment type.

4.15.6 Vehicle Type

The table below list the values to be used for vehicle type. This describes the physical properties of the vehicle. ONLY the listed values are to be used.

ID	Name
----	------

1	Car
2	Lorry
3	Bus
4	Taxi
5	Train
6	Motor cycle
7	Vehicle with trailer
12	Ferry
13	Bicycle
14	Scooter
15	Airplane
255	Undecodable vehicle type

4.15.7 Operator

The provided data should be mapped to operator list as defined in the following site.

<https://opendata.transport.nsw.gov.au/dataset/public-transport-location-facilities-and-operators/resource/20224158-c4e0-4868-8f4a#{}>

Note: This list is not exhaustive. The list can be expanded as per request.

4.15.8 Application

The table below list the values to be used for MasS ecosystem providers' mobile or web application. ONLY the listed values are to be used.

Note: This list is not exhaustive. The list can be expanded as per request.

ID	Name
000001	Uber
000002	Tranzer
000003	Whim
000004	Swiftfare Fleet
000005	TripGo

4.15.9 Vehicle Service Hour

The table below list the values to be used for vehicle service hour. ONLY the listed values are to be used.

ID	Time Period
0000	0000 hrs to 0015 hrs
0015	0015 hrs to 0030 hrs
0030	0030 hrs to 0045 hrs
0045	0045 hrs to 0100 hrs
0100	0100 hrs to 0115 hrs
0115	0115 hrs to 0130 hrs
0130	0130 hrs to 0145 hrs
0145	0145 hrs to 0200 hrs
0200	0200 hrs to 0215 hrs
0215	0215 hrs to 0230 hrs
0230	0230 hrs to 0245 hrs
0245	0245 hrs to 0300 hrs

0300	0300 hrs to 0315 hrs
0315	0315 hrs to 0330 hrs
0330	0330 hrs to 0345 hrs
0345	0345 hrs to 0400 hrs
0400	0400 hrs to 0415 hrs
0415	0415 hrs to 0430 hrs
0430	0430 hrs to 0445 hrs
0445	0445 hrs to 0500 hrs
0500	0500 hrs to 0515 hrs
0515	0515 hrs to 0530 hrs
0530	0530 hrs to 0545 hrs
0545	0545 hrs to 0600 hrs
0600	0600 hrs to 0615 hrs
0615	0615 hrs to 0630 hrs
0630	0630 hrs to 0645 hrs
0645	0645 hrs to 0700 hrs
0700	0700 hrs to 0715 hrs
0715	0715 hrs to 0730 hrs
0730	0730 hrs to 0745 hrs
0745	0745 hrs to 0800 hrs
0800	0800 hrs to 0815 hrs
0815	0815 hrs to 0830 hrs
0830	0830 hrs to 0845 hrs
0845	0845 hrs to 0900 hrs
0900	0900 hrs to 0915 hrs
0915	0915 hrs to 0930 hrs
0930	0930 hrs to 0945 hrs
0945	0945 hrs to 1000 hrs
1000	1000 hrs to 1015 hrs
1015	1015 hrs to 1030 hrs
1030	1030 hrs to 1045 hrs
1045	1045 hrs to 1100 hrs
1100	1100 hrs to 1115 hrs
1115	1115 hrs to 1130 hrs
1130	1130 hrs to 1145 hrs
1145	1145 hrs to 1200 hrs
1200	1200 hrs to 1215 hrs
1215	1215 hrs to 1230 hrs
1230	1230 hrs to 1245 hrs
1245	1245 hrs to 1300 hrs
1300	1300 hrs to 1315 hrs
1315	1315 hrs to 1330 hrs
1330	1330 hrs to 1345 hrs
1345	1345 hrs to 1400 hrs
1400	1400 hrs to 1415 hrs
1415	1415 hrs to 1430 hrs
1430	1430 hrs to 1445 hrs
1445	1445 hrs to 1500 hrs
1500	1500 hrs to 1515 hrs
1515	1515 hrs to 1530 hrs

1530	1530 hrs to 1545 hrs
1545	1545 hrs to 1600 hrs
1600	1600 hrs to 1615 hrs
1615	1615 hrs to 1630 hrs
1630	1630 hrs to 1645 hrs
1645	1645 hrs to 1700 hrs
1700	1700 hrs to 1715 hrs
1715	1715 hrs to 1730 hrs
1730	1730 hrs to 1745 hrs
1745	1745 hrs to 1800 hrs
1800	1800 hrs to 1815 hrs
1815	1815 hrs to 1830 hrs
1830	1830 hrs to 1845 hrs
1845	1845 hrs to 1900 hrs
1900	1900 hrs to 1915 hrs
1915	1915 hrs to 1930 hrs
1930	1930 hrs to 1945 hrs
1945	1945 hrs to 2000 hrs
2000	2000 hrs to 2015 hrs
2015	2015 hrs to 2030 hrs
2030	2030 hrs to 2045 hrs
2045	2045 hrs to 2100 hrs
2100	2100 hrs to 2115 hrs
2115	2115 hrs to 2130 hrs
2130	2130 hrs to 2145 hrs
2145	2145 hrs to 2200 hrs
2200	2200 hrs to 2215 hrs
2215	2215 hrs to 2230 hrs
2230	2230 hrs to 2245 hrs
2245	2245 hrs to 2300 hrs
2300	2300 hrs to 2315 hrs
2315	2315 hrs to 2330 hrs
2330	2330 hrs to 2345 hrs
2345	2345 hrs to 0000 hrs

4.16 Default value

If no data is provided for the optional field, the field shall be an empty string.

5 Data Feeds

The Open Data and Innovation team in TfNSW is looking to collaborate with an operator to host the data feed files in Open Data Hub. This serves as a centralised location to host and broadcast data feeds to operators and trip planners which are looking to ingest these data feeds and provide information for the commuters.

5.1 GTFS and GTFS Realtime

Where possible, the operator, except bike share and scooter operators, shall provide TfNSW with GTFS and GTFS Realtime data feeds according to the TfNSW GTFS and GTFS Realtime Implementation Specification.

The purpose of TfNSW GTFS and GTFS Realtime Implementation Specification is to:

1. Localise the GTFS and GTFS Realtime specification to TfNSW needs
2. Reduce the complexity and risk of implementation e.g. If there are multiple ways of doing the same thing then this specification 'localises' each implementation to a single way, based on best practise, communications and processing efficiency, and requirements.
3. Ensure consistent interpretation of the GTFS and GTFS Realtime specification
4. Describe relevant TfNSW business rules that are necessarily absent from the GTFS and GTFS Realtime specification
5. Define GTFS and GTFS Realtime information sharing rules
6. Define common terminology.

The MaaS ecosystem providers are encouraged to share any suggested changes to the TfNSW GTFS and GTFS Realtime Implementation Specification with TfNSW.

5.2 Vehicle information (Realtime)

TfNSW want to know the vehicle occupancy and positioning information to understand the network capacity in real time. Trip planning apps or other booking services can also use the data to determine real time capacity information.

5.2.1 File Requirement

Below are the requirements of this file.

- All files should be valid JSON
- All data should be UTF-8 encoded
- Line breaks should be represented by unix newline characters only (\n)

5.2.2 File name

There are restrictions on the file naming convention. The filename has to be kept the same throughout the period. If there is any change in the filename, the ODI team should be notified.

The file naming convention is <operator name-filename-yyyyMMddTHHmms>
e.g. TfNSW-Trip-20190106T110030 or TfNSW-Leg-20190106T103025

5.2.3 File transfer

The file is to be uploaded into TfNSW Data Lake. Each data provider will be provided with access to TfNSW Azure environment.

5.2.4 Frequency

This data feed must be updated at least every 15 seconds. It is expected that the source systems will have the capability to operate at 5 seconds and therefore the 15 second update will be near realtime.

5.2.5 Specification

Name	Type	Format/Units	Description	Example
trip_id	String	AAAAAA	This value referenced from the trip_id that is used within the GTFS feed or trip that is used within the GTFS Realtime feed. For non-timetabled services, this value is null.	1.AA51.1-SC0-1-sj2-2.1.R
operator_id	Number	NNNNNN	ID of the operator. Refer to 4.15.7 for the values.	900080
service_area	String	WKT	Service area of the vehicle in WKT format. It specifies a polygon, multipolygon, or other area in WKT format. For vehicle without any service area, this value is blank.	POLYGON(((151.27830505371 - 33.840637207031, 151.26594543457 - 33.859176635742, 151.28654479981 - 33.868103027344, 151.28654479981 - 33.850250244141, 151.27830505371 - 33.840637207031)))
latitude	Number	- NNN.NNN NNN	The latitude of the vehicle.	-31.840233
longitude	Number	NN.NNNN NN	The Longitude of the vehicle.	145.612793
bearing	Number	NNN	Bearing, in degrees, clockwise from True North, i.e., 0 is North and 90 is East. This can be the compass bearing, or the direction towards the next stop or intermediate location. This should not be deduced from the sequence of previous positions, which clients can compute from previous data.	90

timestamp	Number	NNNNNN NNNN	Moment at which the vehicle's real-time progress was measured. In POSIX time (i.e., the number of seconds since January 1st 1970 00:00:00 UTC).	1550199855
id	String	AAAAAAA AAA	ID of the vehicle. This can be the vehicle registration ID of the vehicle or fleet number.	ODI 10 DT
type	Number	N	Type of the vehicle. Refer to section 4.15.6 for the values.	1
wheelchair_accessible	Number	N	Indicates if there is accessibility information for the vehicle. Refer to section 4.15.3 for the values.	1
seats_available	Number	NNN	This is the number of seats available in the vehicle.	12
standing_capacity_available	Number	NNN	This is the standing capacity available in the vehicle.	12
wheelchair_capacity_available	Number	N	This is the number of wheelchair spot available in the vehicle.	2
delay	Number	NNNN	The current schedule deviation for the trip. Delay should only be specified when the prediction is given relative to some existing schedule in GTFS. Delay (in seconds) can be positive (meaning that the vehicle is late) or negative (meaning that the vehicle is ahead of schedule). Delay of 0 means that the vehicle is exactly on time. For non-timetabled services, this value is 0.	0

TfNSW is expecting the file type to be JSON. Please see below for the JSON data structure.

```
{
  "trip": {
    "trip_id": "string",
    "operator_id": "number",
    "service_area": "wkt"
  },
  "position": {
    "latitude": "number",
    "longitude": "number",
    "bearing": "number"
  },
  "timestamp": "number",
  "vehicle": {
    "id": "string",
    "type": "number",
    "wheelchair_accessible": "number",
    "seats_available": "number",
    "standing_capacity_available": "number",
    "wheelchair_capacity_available": "number"
  },
  "delay": "number"
}
```

5.3 GBFS

Bike share and scooters operators are encouraged to provide TfNSW with GBFS data feeds according to the GBFS data standard. GBFS makes real-time data feeds in a uniform format publicly available online, with an emphasis on findability.

The current specification can be found at <https://github.com/NABSA/gbfs/blob/master/gbfs.md>.

Below describes the files along with their associated content.

File Name	Required	Defines
gbfs.json	Optional	Auto-discovery file that links to all of the other files published by the system. This file is optional, but highly recommended.
system_information.json	Yes	Describes the system including System operator, System location, year implemented, URLs, contact info, time zone
station_information.json	Conditionally required	Mostly static list of all stations, their capacities and locations. Required of systems utilizing docks.

station_status.json	Conditionally required	Number of available bikes and docks at each station and station availability. Required of systems utilizing docks.
free_bike_status.json	Conditionally required	Describes bikes that are available for rent. Required of systems that don't utilize docks or offer bikes for rent outside of stations.
system_hours.json	Optional	Describes the hours of operation for the system
system_calendar.json	Optional	Describes the days of operation for the system
system_regions.json	Optional	Describes the regions the system is broken up into
system_pricing_plans.json	Optional	Describes the system pricing
system_alerts.json	Optional	Describes current system alerts