

Transport Canberra & City Services

GTFS - TCCS Implementation Specification

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1 Overview

1.1 Overview

The GTFS (general transit feed specification) feed provides static timetabling information about a transit network, including stops, routes, trip schedules and other information like a trip's geometry and information about the transit agency running the trips. This data is suitable for planning trips as well as presenting trip information to a customer via a graphical user interface. The feed also contains real time information about the transit network, including which trips are currently running on the network, the position of each of the vehicles completing the trips, which of the scheduled stops have been made, the difference between the scheduled and actual departure times as well as the actual and scheduled arrival times.

The GTFS bundle feed is composed of a number of text files which are all contained within a single zip file. Each of the files contains scheduled information about a different aspect of the ACT transit network. For example stops_times.txt contains information about the scheduled time and order of stops for different trips. Each of the fields in the files are also documented and their meanings are explained.

1.2 Why a TC GTFS Implementation Specification is Needed

The TC GTFS Implementation Specification is required to:

1. Be used as a point of reference for individuals in relevant TC departments.
2. Localise the GTFS specification to TC needs.
3. 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.
4. Ensure consistent interpretation of the GTFS specification.
5. Describe relevant TC business rules that are necessarily absent from the standard GTFS specification.

2 Timetable Data Feed – General Requirements

2.1 Scope

- TC is responsible for ensuring the TC GTFS specification continues to align with the standard GTFS and Transport for NSW (TfNSW) data specifications.
- GTFS data specifications are to be updated and managed by TC.

2.2 Files

- Timetable data is generated in accordance with the **General Transit Feed Specification (GTFS)** standards as well as the TC specific business rules detailed in this document. For published GTFS standards refer to the reference guide available at <https://developers.google.com/transit/gtfs/reference>.
 - GTFS file-set bundle will be provided in the form of a single file set bundle in .zip format.
 - The zip file will be named in the format “**google_transit.zip**”
 - The zip file will not exceed 20MB in size.
 - The .zip file will contain the following files and named as follows. Some files are not required and are therefore not included at this time.

Filename	Included	Defines
agency.txt	Yes	One or more transit agencies that provide the data in this feed.
stops.txt	Yes	Individual locations where vehicles pick up or drop off passengers.
routes.txt	Yes	Transit routes. A route is a group of trips that are displayed to riders as a single service.
trips.txt	Yes	Trips for each route. A trip is a sequence of two or more stops that occurs at specific time.
stop_times.txt	Yes	Times that a vehicle arrives at and departs from individual stops for each trip.
calendar.txt	Yes	Dates for service IDs using a weekly schedule. Specify when service starts and ends, as well as days of the week where service is available.
calendar_dates.txt	Yes	Exceptions for the service IDs defined in the calendar.txt file. If calendar_dates.txt includes ALL dates of service, this file may be specified instead of calendar.txt.
shapes.txt	Yes	Rules for drawing lines on a map to represent a transit organization's routes.

notes.txt	No	TC Extension to the GTFS standard used for providing descriptive information about trips and stops.
fare_attributes.txt	No	Fare information for a transit organization's routes.
fare_rules.txt	No	Rules for applying fare information for a transit organization's routes.
frequencies.txt	No	Headway (time between trips) for routes with variable frequency of service.
transfers.txt	No	Rules for making connections at transfer points between routes.
feed_info.txt	No	Additional information about the feed itself, including publisher, version, and expiration information.

2.3 General file standards

- All values contained in files within the GTFS bundle will be surrounded by double quotations i.e. "**<data>**". This includes null or empty values e.g. ""

2.4 Validity period and timetable projection

- Service timetables will be forward looking by a minimum of **two weeks**.
- Timetable projections are defined by utilising the **calendar.txt** (Section 3.4) and **calendar_dates.txt** (Section 3.5) files.

3 Timetable Data Feed – File and Field Specific Requirements

3.1 Agency.txt

The Agency file identifies all providers whose timetable data has been included in the GTFS file-set generated.

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of an **agency.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
agency_id	Yes	The agency_id field is an ID that uniquely identifies a transit agency. A transit feed may represent data from more than one agency. The agency_id is dataset unique. This field is mandatory and must be populated for transit feeds	<ul style="list-style-type: none"> This is the operator’s agency id, allocated by TC. For Example: “TC”.
agency_name	Yes	The agency_name field contains the full name of the transit agency. Google Maps will display this name.	<ul style="list-style-type: none"> The Operator’s ‘Customer Facing Name’. Note that this is not necessarily the same as the legal entity name. Must be formatted in TITLE CAPS. For Example: “Transport Canberra”
agency_url	Yes	The agency_url field contains the URL of the transit agency. The value must be a fully qualified URL that includes http:// or https://, and any special characters in the URL must be correctly escaped. See http://www.w3.org/Addressing/URL/4_URI_Recommentations.html for a description of how to create fully qualified URL values.	<ul style="list-style-type: none"> Must always be a fixed static value of “https://www.transport.act.gov.au/” Must be formatted in LOWERCASE
agency_timezone	Yes	The agency_timezone field contains the time zone where the transit agency is located. Time zone names never contain the space character but may contain an underscore. Please refer to http://en.wikipedia.org/wiki/List_of_tz_zones for a list of valid values. If multiple agencies are specified in the feed, each must have the same agency_timezone.	<ul style="list-style-type: none"> Must always be a fixed static value of “Australia/Sydney” Must be formatted in TITLE CAPS.

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
agency_lang	Yes	The agency_lang field contains a two-letter ISO 639-1 code for the primary language used by this transit agency. The language code is case-insensitive (both en and EN are accepted). This setting defines capitalization rules and other language-specific settings for all text contained in this transit agency's feed. Please refer to http://www.loc.gov/standards/iso639-2/php/code_list.php for a list of valid values.	<ul style="list-style-type: none"> • Must always be a fixed static value of "EN" • Must be formatted in TITLE CAPS.
agency_phone	Yes	The agency_phone field contains a single voice telephone number for the specified agency. This field is a string value that presents the telephone number as typical for the agency's service area. It can and should contain punctuation marks to group the digits of the number. Dialable text (for example, TriMet's "503-238-RIDE") is permitted, but the field must not contain any other descriptive text.	<ul style="list-style-type: none"> • Must always be a fixed static value of "13 17 10"
agency_fare_url	No	The agency_fare_url specifies the URL of a web page that allows a rider to purchase tickets or other fare instruments for that agency online. The value must be a fully qualified URL that includes http:// orhttps://, and any special characters in the URL must be correctly escaped. See http://www.w3.org/Addressing/URL/4_URI_Recommendations.html for a description of how to create fully qualified URL values.	
agency_email	No	The agency_email field contains a single valid email address actively monitored by the agency's customer service department. This email address will be considered a direct contact point where transit riders can reach a customer service representative at the agency.	

3.2 Routes.txt

The Routes file identifies all the routes for a single contract included in the GTFS file-set generated.

The data provided will reflect a customer view of the timetable, with the grouping of trips in logical routes. It will reflect a customer journey and not split trips at non-revenue stops or city circle loop.

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of a **routes.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
route_id	Yes	The route_id field contains an ID that uniquely identifies a route. The route_id is dataset unique.	<ul style="list-style-type: none"> • Unique identifier for a route independently generated by the data provider • The route_id is to be unique within the GTFS file set provided. • For Example: "1-10445"
route_short_name	Yes	The route_short_name contains the short name of a route. This will often be a short, abstract identifier like "1", "250", or "Red" that riders use to identify a route, but which doesn't give any indication of what places the route serves. At least one of route_short_name or route_long_name must be specified, or potentially both if appropriate. If the route does not have a short name, please specify a route_long_name and use an empty string as the value for this field.	<ul style="list-style-type: none"> • The short code identifying the Route to the public. Refer to Appendix 5.1.3 for route information mappings. • This field is CASE SENSITIVE • For Example: "45" • Should be no longer than 4-characters
route_long_name	Yes	The route_long_name contains the full name of a route. This name is generally more descriptive than the route_short_name and will often include the route's destination or stop. At least one of route_short_name or route_long_name must be specified, or potentially both if appropriate. If the route does not have a long name, please specify a route_short_name and use an empty string as the value for this field.	<ul style="list-style-type: none"> • The long name identifying the Route to the public • This field is CASE SENSITIVE • No commas • For Example: "City Woden & Dickson"
route_desc	Yes	The route_desc field contains a description of a route. This is to provide useful, quality information. Do not simply duplicate the name of the route.	<ul style="list-style-type: none"> • Indicates the Network that the Route belongs to as defined by TC Wayfinding. • For Example: "CBR Bus Network"

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
route_type	Yes	<p>The route_type field describes the type of transportation used on a route. Valid values for this field are:</p> <p>3 – Bus Service. Used for short- and long-distance bus routes. 712 – School Bus Service</p>	<ul style="list-style-type: none"> For Example: “3”
route_color	Yes	<p>In systems that have colors assigned to routes, the route_color field defines a color that corresponds to a route. The color must be provided as a six-character hexadecimal number, for example, 00FFFF. If no color is specified, the default route color is white (FFFFFF).</p> <p>The color difference between route_color and route_text_color should provide sufficient contrast when viewed on a black and white screen. The W3C Techniques for Accessibility Evaluation And Repair Tools document offers a useful algorithm for evaluating color contrast. There are also helpful online tools for choosing contrasting colors, including the snook.ca Color Contrast Check application.</p>	<ul style="list-style-type: none"> Must always be a fixed static value of “0042AC”
route_text_color	Yes	<p>The route_text_color field can be used to specify a legible color to use for text drawn against a background of route_color. The color must be provided as a six-character hexadecimal number, for example, FFD700. If no color is specified, the default text color is black (000000).</p> <p>The color difference between route_color and route_text_color should provide sufficient contrast when viewed on a black and white screen.</p>	<ul style="list-style-type: none"> Must always be a fixed static value of “FFFFFF”
route_url	Yes	<p>The route_url field contains the URL of a web page about that particular route. This should be different from the agency_url.</p> <p>The value must be a fully qualified URL that includes http:// or https://, and any special characters in the URL must be correctly escaped. See http://www.w3.org/Addressing/URL/4_URI_Recommendations.html for a description of how to create fully qualified URL values.</p>	<ul style="list-style-type: none"> This should refer to the TC website and/or designated /URL and not that of the operator. For Example “http://www.transport.act.gov.au/routes-and-timetables/timetables/”

3.3 Trips.txt

The Trips file provides information on all the trips for a contract whose timetable data has been included in the GTFS file-set generated.

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of a **trips.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
route_id	Yes	The route_id field contains an ID that uniquely identifies a route. This value is referenced from the routes.txt file.	<ul style="list-style-type: none"> Unique identifier for a route independently generated by Data Provider. For Example: "1-10445"
service_id	Yes	The service_id contains an ID that uniquely identifies a set of dates when service is available for one or more routes. This value is referenced from the calendar.txt or calendar_dates.txt file.	<ul style="list-style-type: none"> Unique identifier for a route independently generated by Data Provider that identifies a set of dates when a service is available for one or more routes. For Example: "2017-2-COMBNXT-Weekday-10"
trip_id	Yes	The trip_id field contains an ID that identifies a trip. The trip_id is dataset unique.	<ul style="list-style-type: none"> Unique identifier for a trip independently generated by Data Provider. The trip_id is to be unique within the GTFS file set provided. trip_id is the primary reference identifier for matching static timetables with real time data feeds (GTFS-R) For Example: "33687593-2017-2-COMBNXTWeekday-10"
trip_headsign	Yes	The trip_headsign field contains the text that appears on a sign that identifies the trip's destination to passengers. Use this field to distinguish between different patterns of service in the same route. If the head sign changes during a trip, you can override the trip_headsign by specifying values for the stop_headsign field in stop_times.txt.	<ul style="list-style-type: none"> The trip_headsign field is to contain the text that appears on a sign that identifies the trip's destination to passengers. The destination stop for the strip is to be applied For Example: "Woden"

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
trip_short_name	No	<p>The trip_short_name field contains the text that appears in schedules and sign boards to identify the trip to passengers, for example, to identify bus number for commuter bus trips. If riders do not commonly rely on trip names, this field blank will be blank.</p> <p>A trip_short_name value, if provided, should uniquely identify a trip within a service day; it should not be used for destination names or limited/express designations.</p>	<ul style="list-style-type: none"> The trip_short_name is the service number
direction_id	Yes	<p>The direction_id field contains a binary value that indicates the direction of travel for a trip. Use this field to distinguish between bi-directional trips with the same route_id. This field is not used in routing; it provides a way to separate trips by direction when publishing time tables. You can specify names for each direction with the trip_headsign field.</p> <ul style="list-style-type: none"> 0 - travel in one direction (e.g. outbound travel) 1 - travel in the opposite direction (e.g. inbound travel) <p>For example, you could use the trip_headsign and direction_id fields together to assign a name to travel in each direction for a set of trips. A trips.txt file could contain these rows for use in time tables:</p> <pre>trip_id,...,trip_headsign,direction_id 33687598-2017-2-COMBNXT-Weekday-10,...,Woden Bus Stn,0 33688301-2017-2-COMBNXT-Weekday-10,...,Kippax Bus Stn,1</pre>	<ul style="list-style-type: none"> Indicates the direction (outgoing, inbound) of the Trip. 'Loop' services will be indicated as '1 – Inbound' so the possible values will be: <ul style="list-style-type: none"> 1 – Inbound 0 – Outbound 1 – Loop (becomes Inbound) Trip stopping pattern direction Id should be different to the stopping pattern in the opposite direction For Example: "1"

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
block_id	No	The block_id field identifies the block to which the trip belongs. A block consists of two or more sequential trips made using the same vehicle, where a passenger can transfer from one trip to the next just by staying in the vehicle. The block_id must be referenced by two or more trips in trips.txt.	<ul style="list-style-type: none"> • Unique identifier for a block independently generated by data provider • For example “6182286”
shape_id	Yes	The shape_id field contains an ID that defines a shape for the trip. This value is referenced from the shapes.txt file. The shapes.txt file allows you to define how a line should be drawn on the map to represent a trip.	<ul style="list-style-type: none"> • Unique identifier for a shape independently generated by data provider • For Example: “10082”
wheelchair_accessible	Yes	<ul style="list-style-type: none"> • 0 (or empty) - indicates that there is no accessibility information for the trip • 1 - indicates that the vehicle being used on this particular trip can accommodate at least one rider in a wheelchair • 2 - indicates that no riders in wheelchairs can be accommodated on this trip 	<ul style="list-style-type: none"> • A value of either “1” or “2” must be provided
bikes_allowed	Yes	<ul style="list-style-type: none"> • 0 (or empty) - indicates that there is no bike information for the trip • 1 - indicates that the vehicle being used on this particular trip can accommodate at least one bicycle • 2 - indicates that no bicycles are allowed on this trip 	
trip_note	No	<p>TC Extension</p> <ul style="list-style-type: none"> • Trip notes are provided by operators for each trip to provide further information to customers. 	<ul style="list-style-type: none"> • Reference key to the notes.txt file (a TC extension to the standard GTFS – refer to Section 3.9 Notes.txt) where trip notes can be defined. • Unique identifier for a note independently generated by Light Rail. • For trips without a trip note this field can be left blank, for example e.g. “”

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
route_direction	No	TC Extension <ul style="list-style-type: none"> Route directions are provided by Operators for each trip and are to be made available to Customers. 	<ul style="list-style-type: none"> The customer facing description of the route direction as approved by TC.

3.4 Calendar.txt

The Calendar file provides a set of dates when service is available for one or more routes.

TC provide data that is projected forward, so that customers are able to view service timetables at least 2 weeks in advance. This means:

- The **start_date** will be <today> i.e. the day the GTFS file set was generated. This represents the effective start date of the GTFS file-set bundle.
- The **end_date** will be at least 2 weeks from <today> and represents the effective end date of the GTFS file-set bundle provided.
- For the time periods where services have not been officially scheduled **a timetable projection is required**. The projected portion of the timetable should be based on a **“standard timetable”** which can be any historical timetable the Data Provider deems suitable for each of the **7 day types (Monday through to Sunday)**. For example:
 - If the timetable for **Monday the 22nd of February 2016** is considered “standard” then that timetable can be used as the projected timetable for all Mondays in the GTFS file-set where a projection is required. This process can be repeated for all remaining day types (Tuesday through to Sunday).
 - Exceptions:
 - Consideration should be given **for public holidays** and special events that are expected to occur within the projection period

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of a **calendar.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
service_id	Yes	The service_id contains an ID that uniquely identifies a set of dates when service is available for one or more routes. Each service_id value can appear at most once in a calendar.txt file. This value is dataset unique. It is referenced by the trips.txt file.	<ul style="list-style-type: none"> Unique identifier for a route independently generated by Data Provider that identifies a set of dates when a service is available for one or more routes. For Example: “2017-2-COMBNXT-Weekday-10”

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
monday	Yes	<p>The monday field contains a binary value that indicates whether the service is valid for all Mondays.</p> <ul style="list-style-type: none"> A value of 1 indicates that service is available for all Mondays in the date range. (The date range is specified using the start_date and end_date fields.) A value of 0 indicates that service is not available on Mondays in the date range. <p>Note: You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.</p>	<ul style="list-style-type: none"> For Example: "1"
tuesday	Yes	<p>The tuesday field contains a binary value that indicates whether the service is valid for all Tuesdays.</p> <ul style="list-style-type: none"> A value of 1 indicates that service is available for all Tuesdays in the date range. (The date range is specified using the start_date and end_date fields.) A value of 0 indicates that service is not available on Tuesdays in the date range. <p>Note: You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.</p>	<ul style="list-style-type: none"> For Example: "0"
wednesday	Yes	<p>The wednesday field contains a binary value that indicates whether the service is valid for all Wednesdays.</p> <ul style="list-style-type: none"> A value of 1 indicates that service is available for all Wednesdays in the date range. (The date range is specified using the start_date and end_date fields.) A value of 0 indicates that service is not available on Wednesdays in the date range. <p>Note: You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.</p>	<ul style="list-style-type: none"> For Example: "1"

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
thursday	Yes	<p>The thursday field contains a binary value that indicates whether the service is valid for all Thursdays.</p> <ul style="list-style-type: none"> A value of 1 indicates that service is available for all Thursdays in the date range. (The date range is specified using the start_date and end_date fields.) A value of 0 indicates that service is not available on Thursdays in the date range. <p>Note: You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.</p>	<ul style="list-style-type: none"> For Example: "0"
friday	Yes	<p>The friday field contains a binary value that indicates whether the service is valid for all Fridays.</p> <ul style="list-style-type: none"> A value of 1 indicates that service is available for all Fridays in the date range. (The date range is specified using the start_date and end_date fields.) A value of 0 indicates that service is not available on Fridays in the date range. <p>Note: You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.</p>	<ul style="list-style-type: none"> For Example: "1"
saturday	Yes	<p>The saturday field contains a binary value that indicates whether the service is valid for all Saturdays.</p> <ul style="list-style-type: none"> A value of 1 indicates that service is available for all Saturdays in the date range. (The date range is specified using the start_date and end_date fields.) A value of 0 indicates that service is not available on Saturdays in the date range. <p>Note: You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.</p>	<ul style="list-style-type: none"> For Example: "0"

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
sunday	Yes	<p>The sunday field contains a binary value that indicates whether the service is valid for all Sundays.</p> <ul style="list-style-type: none"> A value of 1 indicates that service is available for all Sundays in the date range. (The date range is specified using the start_date and end_date fields.) A value of 0 indicates that service is not available on Sundays in the date range. <p>Note: You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file.</p>	<ul style="list-style-type: none"> For Example: "1"
start_date	Yes	<p>The start_date field contains the start date for the service.</p> <p>The start_date field's value should be in YYYYMMDD format.</p>	<ul style="list-style-type: none"> For Example: "20180627"
end_date	Yes	<p>The end_date field contains the end date for the service. This date is included in the service interval.</p> <p>The end_date field's value should be in YYYYMMDD format.</p>	<ul style="list-style-type: none"> For Example: "20180627"

3.5 Calendar_dates.txt

The Calendar dates file provides the ability to define service exceptions for one or more of the provided routes. This mechanism is commonly used to override standard timetables defined in the Calendar.txt file e.g. when a particular service will not be running on a specific day for a limited period of time.

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of a **calendar_dates.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
service_id	Yes	The service_id contains an ID that uniquely identifies a set of dates when a service exception is available for one or more routes. Each (service_id, date) pair can only appear once in calendar_dates.txt. If the service_id value appears in both the calendar.txt and calendar_dates.txt files, the information in calendar_dates.txt modifies the service information specified in calendar.txt. This field is referenced by the trips.txt file.	<ul style="list-style-type: none"> • Unique identifier for a route independently generated by the data provider that identifies a set of dates when a service is available for one or more routes. • For Example: "2017-2-COMBNXT-Weekday-10"
date	Yes	The date field specifies a particular date when service availability is different than the norm. You can use the exception_type field to indicate whether service is available on the specified date. The date field's value should be in YYYYMMDD format.	<ul style="list-style-type: none"> • For Example: "20180627"
exception_type	Yes	The exception_type indicates whether service is available on the date specified in the date field. <ul style="list-style-type: none"> • A value of 1 indicates that service has been added for the specified date. • A value of 2 indicates that service has been removed for the specified date. <p>For example, suppose a route has one set of trips available on holidays and another set of trips available on all other days. You could have one service_id that corresponds to the regular service schedule and another service_id that corresponds to the holiday schedule. For a particular holiday, you would use the calendar_dates.txt file to add the holiday to the holiday service_id and to remove the holiday from the regular service_id schedule.</p>	<ul style="list-style-type: none"> • For Example: "1"

3.6 Shapes.txt

The Shapes file contains data to enable visual representation of a trip's path based on the route paths points.

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of a **shapes.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
shape_id	Yes	The shape_id field contains an ID that uniquely identifies a shape.	<ul style="list-style-type: none"> • Unique identifier for a shape independently generated by Data Provider. • Unique identifier generated by the Data Provider timetable system that identifies the shape in question. • For Example: "10082"
shape_pt_lat	Yes	<p>The shape_pt_lat field associates a shape point's latitude with a shape ID. The field value must be a valid WGS 84 latitude. Each row in shapes.txt represents a shape point in your shape definition.</p> <p>For example, if the shape "10082" has three points in its definition, the shapes.txt file might contain these rows to define the shape:</p> <pre>10082,-35.343905,149.087783,10001 10082,-35.343805,149.087786,10004 10082,-35.343669,149.087884,10008</pre>	<ul style="list-style-type: none"> • For Example: "-35.343905"
shape_pt_lon	Yes	<p>The shape_pt_lon field associates a shape point's longitude with a shape ID. The field value must be a valid WGS 84 longitude value from -180 to 180. Each row in shapes.txt represents a shape point in your shape definition.</p> <p>For example, if the shape "10082" has three points in its definition, the shapes.txt file might contain these rows to define the shape:</p> <pre>10082,-35.343905,149.087783,10001 10082,-35.343805,149.087786,10004 10082,-35.343669,149.087884,10008</pre>	<ul style="list-style-type: none"> • For Example: "149.087783"

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
shape_pt_sequence	Yes	<p>The shape_pt_sequence field associates the latitude and longitude of a shape point with its sequence order along the shape. The values for shape_pt_sequence must be non-negative integers, and they must increase along the trip.</p> <p>For example, if the shape "10082" has three points in its definition, the shapes.txt file might contain these rows to define the shape:</p> <pre>10082,-35.343905,149.087783,10001 10082,-35.343805,149.087786,10004 10082,-35.343669,149.087884,10008</pre>	<ul style="list-style-type: none"> For Example: "10001"
shape_dist_traveled	No	<p>When used in the shapes.txt file, the shape_dist_traveled field positions a shape point as a distance travelled along a shape from the first shape point. The shape_dist_traveled field represents a real distance travelled along the route in units such as meters. This information allows the trip planner to determine how much of the shape to draw when showing part of a trip on the map. The values used for shape_dist_traveled must increase along with shape_pt_sequence: they cannot be used to show reverse travel along a route.</p> <p>The units used for shape_dist_traveled in the shapes.txt file must match the units that are used for this field in the stop_times.txt file.</p> <p>For example, if a bus travels along the three points defined above for "10082", the additional shape_dist_traveled values (shown here in meters) would look like this:</p> <pre>10126,-35.2505,149.1406,10001, 10126,-35.2489,149.1401,10008,</pre>	<ul style="list-style-type: none"> For Example: "10126,-35.2505,149.1406,10001, "

3.7 Stops.txt

The Stops.txt file contains the stops that can be referenced by one or more trips within the GTFS file-set bundle.

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of a **stops.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
stop_id	Yes	The stop_id field contains an ID that uniquely identifies a stop or station. Multiple routes may use the same stop. The stop_id is dataset unique.	<ul style="list-style-type: none"> For Example: “1008”
stop_code	No	The stop_code field contains short text or a number that uniquely identifies the stop for passengers. Stop codes are often used in phone-based transit information systems or printed on stop signage to make it easier for riders to get a stop schedule or real-time arrival information for a particular stop. The stop_code field should only be used for stop codes that are displayed to passengers. For internal codes, use stop_id. This field should be left blank for stops without a code.	
stop_name	Yes	The stop_name field contains the name of a stop or station. Please use a name that people will understand in the local and tourist vernacular.	<ul style="list-style-type: none"> The correct “customer facing” name of the Stop. The stop name must follow the TC stop numbering and Naming standard as per pdf document “TC Transit Stop Naming Standard July 2018” For Example: “Ellerston Av Isabella Plains Shops”
stop_desc	No	The stop_desc field contains a description of a stop. Please provide useful, quality information. Do not simply duplicate the name of the stop.	
stop_lat	Yes	The stop_lat field contains the latitude of a stop or station. The field value must be a valid WGS 84 latitude.	<ul style="list-style-type: none"> For Example: “-33.8792”
stop_lon	Yes	The stop_lon field contains the longitude of a stop or station. The field value must be a valid WGS 84 longitude value from -180 to 180.	<ul style="list-style-type: none"> For Example: “151.2027”

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
zone_id	No	The zone_id field defines the fare zone for a stop ID. Zone IDs are required if you want to provide fare information using fare_rules.txt. If this stop ID represents a station, the zone ID is ignored.	
stop_url	Yes	<p>The stop_url field contains the URL of a web page about a particular stop. This should be different from the agency_url and the route_url fields.</p> <p>The value must be a fully qualified URL that includes http:// or https://, and any special characters in the URL must be correctly escaped.</p> <p>See http://www.w3.org/Addressing/URL/4_URI_Recommendations.html for a description of how to create fully qualified URL values</p>	<ul style="list-style-type: none"> This is used for Interchange maps For example “http://www.transport.act.gov.au/__data/assets/pdf_file/0010/1111051/TC_station_woden.pdf”
location_type	Yes	<p>The location_type field identifies whether this stop ID represents a stop or station. If no location type is specified, or the location_type is blank, stop IDs are treated as stops. Stations may have different properties from stops when they are represented on a map or used in trip planning.</p> <p>The location type field can have the following values:</p> <ul style="list-style-type: none"> 0 or blank - Stop. A location where passengers board or disembark from a transit vehicle. 1 - Station. A physical structure or area that contains one or more stop. 	<ul style="list-style-type: none"> Indicates that the stop is a ‘Stop’ (stopping point) as opposed to a ‘Station’ (stop group).

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data												
parent_station	No	<p>For stops that are physically located inside stations, the parent_station field identifies the station associated with the stop. To use this field, stops.txt must also contain a row where this stop ID is assigned location_type=1.</p> <table border="1"> <thead> <tr> <th>This stop ID represents...</th> <th>This entry's location type...</th> <th>This entry's parent_station field contains...</th> </tr> </thead> <tbody> <tr> <td>A stop located inside a station.</td> <td>0 or blank</td> <td>The stop ID of the station where this stop is located. The stop referenced by parent_station must have location_type=1.</td> </tr> <tr> <td>A stop located outside a station.</td> <td>0 or blank</td> <td>A blank value. The parent_station field doesn't apply to this stop.</td> </tr> <tr> <td>A station.</td> <td>1</td> <td>A blank value. Stations can't contain other stations.</td> </tr> </tbody> </table>	This stop ID represents...	This entry's location type...	This entry's parent_station field contains...	A stop located inside a station.	0 or blank	The stop ID of the station where this stop is located. The stop referenced by parent_station must have location_type=1.	A stop located outside a station.	0 or blank	A blank value. The parent_station field doesn't apply to this stop.	A station.	1	A blank value. Stations can't contain other stations.	<ul style="list-style-type: none"> For example "0"
This stop ID represents...	This entry's location type...	This entry's parent_station field contains...													
A stop located inside a station.	0 or blank	The stop ID of the station where this stop is located. The stop referenced by parent_station must have location_type=1.													
A stop located outside a station.	0 or blank	A blank value. The parent_station field doesn't apply to this stop.													
A station.	1	A blank value. Stations can't contain other stations.													

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
stop_timezone	No	<p>The stop_timezone field contains the time zone in which this stop or station is located. Please refer to Wikipedia List of Time zones for a list of valid values. If omitted, the stop should be assumed to be located in the time zone specified by agency_timezone in agency.txt.</p> <p>When a stop has a parent station, the stop is considered to be in the time zone specified by the parent station's stop_timezone value. If the parent has no stop_timezone value, the stops that belong to that station are assumed to be in the time zone specified by agency_timezone, even if the stops have their own stop_timezone values. In other words, if a given stop has a parent_station value, any stop_timezone value specified for that stop must be ignored.</p> <p>Even if stop_timezone values are provided in stops.txt, the times in stop_times.txt should continue to be specified as time since midnight in the time zone specified by agency_timezone in agency.txt. This ensures that the time values in a trip always increase over the course of a trip, regardless of which time zones the trip crosses.</p>	
wheelchair_boarding	Yes	<p>The wheelchair_boarding field identifies whether wheelchair boardings are possible from the specified stop or station. The field can have the following values:</p> <ul style="list-style-type: none"> • 0 (or empty) - indicates that there is no accessibility information for the stop • 1 - indicates that at least some vehicles at this stop can be boarded by a rider in a wheelchair • 2 - wheelchair boarding is not possible at this stop <p>When a stop is part of a larger station complex, as indicated by a stop with a parent_station value, the stop's wheelchair_boarding field has the following additional semantics:</p> <ul style="list-style-type: none"> • 0 (or empty) - the stop will inherit its wheelchair_boarding value from the parent station, if specified in the parent • 1 - there exists some accessible path from outside the station to the specific stop / platform • 2 - there exists no accessible path from outside the station to the specific stop / platform 	<ul style="list-style-type: none"> • Indicates that a stop is wheelchair accessible
platform_code	No	TC Extension	<ul style="list-style-type: none"> • Platform/stop number as detailed in the stop name
stop_note	No	TC Extension	<ul style="list-style-type: none"> • Stop notes if required

3.8 Stop_times.txt

The Stops times file provides stop time information for all stops included in trips defined within the GTFS file-set bundle.

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of a **stops_times.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
trip_id	Yes	The trip_id field contains an ID that identifies a trip. This value is referenced from the trips.txt file.	<ul style="list-style-type: none"> For example “33687593-2017-2-COMBNXT-Weekday-10”
arrival_time	Yes	<p>The arrival_time specifies the arrival time at a specific stop for a specific trip on a route. The time is measured from "noon minus 12h" (effectively midnight, except for days on which daylight savings time changes occur) at the beginning of the service date. For times occurring after midnight on the service date, enter the time as a value greater than 24:00:00 in HH:MM:SS local time for the day on which the trip schedule begins. If you don't have separate times for arrival and departure at a stop, enter the same value for arrival_time and departure_time.</p> <p>If this stop isn't a time point, use an empty string value for the arrival_time and departure_time fields. Stops without arrival times will be scheduled based on the nearest preceding timed stop. To ensure accurate routing, please provide arrival and departure times for all stops that are time points. Do not interpolate stops.</p> <p>You must specify arrival and departure times for the first and last stops in a trip.</p> <p>Times must be eight digits in HH:MM:SS format (H:MM:SS is also accepted, if the hour begins with 0). Do not pad times with spaces. The following columns list stop times for a trip and the proper way to express those times in the arrival_time field:</p>	<ul style="list-style-type: none"> The arrival time at a specific stop for a specific trip on a route. Times are to be provided to seconds (level of accuracy) Times for trips starting before 04:00 am will be expressed in '36 hour format'. For Example: “25:25:10” (01:25:10 am)

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
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Time	arrival_time value
08:10:00 A.M.	08:10:00 or 8:10:00
01:05:00 P.M.	13:05:00
07:40:00 P.M.	19:40:00
01:55:00 A.M.	25:55:00

Note: Trips that span multiple dates will have stop times greater than 24:00:00. For example, if a trip begins at 10:30:00 p.m. and ends at 2:15:00 a.m. on the following day, the stop times would be 22:30:00 and 26:15:00. Entering those stop times as 22:30:00 and 02:15:00 would not produce the desired results.

departure_time **Yes**

The **departure_time** specifies the departure time from a specific stop for a specific trip on a route. The time is measured from "noon minus 12h" (effectively midnight, except for days on which daylight savings time changes occur) at the beginning of the service date. For times occurring after midnight on the service date, enter the time as a value greater than 24:00:00 in HH:MM:SS local time for the day on which the trip schedule begins. If you don't have separate times for arrival and departure at a stop, enter the same value for arrival_time and departure_time.

If this stop isn't a time point, use an empty string value for the arrival_time and departure_time fields. Stops without arrival times will be scheduled based on the nearest preceding timed stop. To ensure accurate routing, please provide arrival and departure times for all stops that are time points. Do not interpolate stops.

You must specify arrival and departure times for the first and last stops in a trip.

- The departure time from a specific stop for a specific trip on a route.
- Times are to be provided to seconds (level of accuracy)
- Times for trips starting before 04:00 am will be expressed in '36 hour format'.
- For Example: **"25:25:10" (01:25:10 am)**

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
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Times must be eight digits in HH:MM:SS format (H:MM:SS is also accepted, if the hour begins with 0). Do not pad times with spaces. The following columns list stop times for a trip and the proper way to express those times in the departure_time field:

Time	departure_time value
08:10:00 A.M.	08:10:00 or 8:10:00
01:05:00 P.M.	13:05:00
07:40:00 P.M.	19:40:00
01:55:00 A.M.	25:55:00

Note: Trips that span multiple dates will have stop times greater than 24:00:00. For example, if a trip begins at 10:30:00 p.m. and ends at 2:15:00 a.m. on the following day, the stop times would be 22:30:00 and 26:15:00. Entering those stop times as 22:30:00 and 02:15:00 would not produce the desired results.

stop_id	Yes	<p>The stop_id field contains an ID that uniquely identifies a stop. Multiple routes may use the same stop. The stop_id is referenced from the stops.txt file. If location_type is used in stops.txt, all stops referenced in stop_times.txt must have location_type of 0.</p> <p>Where possible, stop_id values should remain consistent between feed updates. In other words, stop A with stop_id 1 should have stop_id 1 in all subsequent data updates. If a stop is not a time point, enter blank values for arrival_time and departure_time.</p>	<ul style="list-style-type: none"> For Example: “2710”
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Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
stop_sequence	Yes	<p>The stop_sequence field identifies the order of the stops for a particular trip. The values for stop_sequence must be non-negative integers, and they must increase along the trip.</p> <p>For example, the first stop on the trip could have a stop_sequence of 1, the second stop on the trip could have a stop_sequence of 23, the third stop could have a stop_sequence of 40, and so on.</p>	<ul style="list-style-type: none"> • The sequence of the Stop within the Trip. • For Example: “3” (indicating that the stop is the 3rd in the Trip)
stop_headsign	Yes	<p>The stop_headsign field contains the text that appears on a sign that identifies the trip's destination to passengers. Use this field to override the default trip_headsign when the headsign changes between stops. If this headsign is associated with an entire trip, use trip_headsign instead.</p>	<ul style="list-style-type: none"> • For Example: “Woden”
pickup_type	Yes	<p>The pickup_type field indicates whether passengers are picked up at a stop as part of the normal schedule or whether a pickup at the stop is not available. This field also allows the transit agency to indicate that passengers must call the agency or notify the driver to arrange a pickup at a particular stop. Valid values for this field are:</p> <ul style="list-style-type: none"> • 0 - Regularly scheduled pickup • 1 - No pickup available • 2 - Must phone agency to arrange pickup • 3 - Must coordinate with driver to arrange pickup <p>The default value for this field is 0.</p>	<ul style="list-style-type: none"> • For Example: “0” (indicating that regularly scheduled pickup occurs at the Stop for the Trip)

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
drop_off_type	Yes	<p>The drop_off_type field indicates whether passengers are dropped off at a stop as part of the normal schedule or whether a drop off at the stop is not available. This field also allows the transit agency to indicate that passengers must call the agency or notify the driver to arrange a drop off at a particular stop. Valid values for this field are:</p> <ul style="list-style-type: none"> • 0 - Regularly scheduled drop off • 1 - No drop off available • 2 - Must phone agency to arrange drop off • 3 - Must coordinate with driver to arrange drop off <p>The default value for this field is 0.</p>	<ul style="list-style-type: none"> • For Example: "0" (indicating that no drop off available for the Stop for the Trip)
shape_dist_traveled	No	<p>When used in the stop_times.txt file, the shape_dist_traveled field positions a stop as a distance from the first shape point. The shape_dist_traveled field represents a real distance travelled along the route in units such as meters. For example, if a bus travels a distance of 5.25 meters from the start of the shape to the stop, the shape_dist_traveled for the stop ID would be entered as "5.25". This information allows the trip planner to determine how much of the shape to draw when showing part of a trip on the map. The values used for shape_dist_traveled must increase along with stop_sequence: they cannot be used to show reverse travel along a route.</p> <p>The units used for shape_dist_traveled in the stop_times.txt file must match the units that are used for this field in the shapes.txt file.</p>	

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
timepoint	Yes	<p>The timepoint field can be used to indicate if the specified arrival and departure times for a stop are strictly adhered to by the transit vehicle or if they are instead approximate and/or interpolated times. The field allows a GTFS producer to provide interpolated stop times that potentially incorporate local knowledge, but still indicate if the times are approximate. For stop-time entries with specified arrival and departure times, valid values for this field are:</p> <ul style="list-style-type: none"> empty - Times are considered exact. 0 - Times are considered approximate. 1 - Times are considered exact. <p>For stop-time entries without specified arrival and departure times, feed consumers must interpolate arrival and departure times. Feed producers may optionally indicate that such an entry is not a timepoint (value=0) but it is an error to mark a entry as a timepoint (value=1) without specifying arrival and departure times.</p>	<ul style="list-style-type: none"> Indicates whether the Stop is a timing point for the Trip. All stops for Bus are timing points. For bus services only the first and last stop and key locations such as Points of Interest, interchanges along a route are timing points. This time should correlate with the timetables available on the TC website For Example: "1"
stop_note	No	<p>TC Extension Stop notes are provided by Operators for each stop and are to be made available to Customers.</p>	<ul style="list-style-type: none"> Reference key to the notes.txt file (a TC extension to the standard GTFS – refer to Section 3.9 Notes.txt) where stop notes can be defined. Unique identifier for a note For stops without a stop note this field can be left blank e.g. ""

3.9 Notes.txt

The Notes file is a **TC defined extension** to the standard GTFS file-set. It is used to provide additional informed such as irregularities of a trip or special conditions on a stop to complement standard timetable information. This file contains the actual note text and is reference by the **trips.txt** file (via the trip_note field), **stops.txt** file (via the stop_note field), and or the **stop_times.txt** file (via the stop_note field).

Field specific requirements for TC in conjunction with the published GTFS standards for the generation of a **notes.txt** file are defined below:

Field	Mandatory	Published GTFS Field Description	TC specific requirements, additional business rules and sample data
note_id	Yes	The note_id field contains an ID that uniquely identifies a note. This ID is referenced in the stop_times.txt, stop.txt and trips.txt files.	<ul style="list-style-type: none"> • Unique identifier for a note independently generated by Data Provider.
note_text	Yes	The note_text field contains the note text that will be made available to customers.	<ul style="list-style-type: none"> • Leading and trailing spaces should be trimmed • For Example: “Gates close two minutes before scheduled departure time.”

4. Glossary

4.1 Glossary of Terms

Term	Explanation
TC	Transport Canberra
CLG	College
Stn	Station
St	Street
TfNSW	Transport for New South Wales
Plt	Platform

5 Appendix

5.1 Approved Agency & Route Values

5.1.1. Agency Names

NOTE: The Bus Agency IDs are accurate as of 18 July 2018 but are subject to change

agency_id	agency_name
TC	Transport Canberra

5.1.2 Route Types

Agency	Route Type	Service Type	
TC	Bus Service	3	Defines Regular, Express, Event bus service type
TC	School Bus	712	Defines School bus service

5.1.3 Route Information Mappings

Route Short Name	Route Long Name	Direction	Service Direction Name	Route Type	Network Name (Route Desc)
1	Yes	0 - Outbound	City, Woden & Dickson	3	CBR Bus Network
2	Yes	1 - Inbound	City, Woden, Dickson, Barton & Deakin	3	CBR Bus Network

5.1.4 Stops

stop_name	stop_id	stop_lat	stop_lon	Platform code	location_type	parent_station
Arboretum Car Park	32	-35.28751	149.068323	NA	Null	Null
Casey Cr after Roope Cl	1019	-35.436661	149.11129	NA	Null	Null