



# API User Guide & Documentation

Version 3.6 14 Dec 2016



# **Document Change Log**

Version	Change Details	Release Date
No.		
1.1	First release of document, reflecting specifications for each dataset.	04 Jun 2014
1.2	Amended attributes for all datasets, and added the update frequency for	15 Jun 2014
	each dataset in specification section.	
1.3	Inserted notes to denote fields that are new and upcoming; not yet	26 Jun 2014
	available on the data feed.	
1.4	Minor revisions (typo errors).	10 Mar 2015
1.5	Revisions to names of datasets, and removed listing for certain attributes	07 Apr 2015
	that are redundant at this point.	
2.0	Revised document for newly revamped DataMall.	13 Apr 2015
	- New Categorisation of Datasets	
	- Moved Park & Ride Location, Premium Bus Service, and Carpark Rates	
	to Static Datasets listed on MyTransport.SG.	
2.1	Corrected reference notes for Carpark Availability and ERP Rates.	14 Apr 2015
2.2	Added Bus Arrival, and Taxi Availability APIs	19 Apr 2015
2.2.1	Amended Update Freqs for Bus Arrival and Taxi Availability	03 Jun 2015
3.0	Bus Arrival API is now enhanced! Latest *beta* release includes:	12 Dec 2015
	- Additional 3 <sup>rd</sup> set of ETA information	
	- Estimated location (coordinates) of buses	
	Look out for blue-highlights!	
3.1	Public-Transport (Bus) Related APIs are enhanced (version 2)!	08 Mar 2016
	- <b>Bus Services</b> and <b>Bus Routes</b> are now consolidated across Operators,	
	e.g. SBST routes and SMRT routes in 1 single API	
	- Attributes are renamed to be more meaningful	
	- <b>Bus Stops</b> now include location (lat/long) coordinates	
	Bug for Bus Arrival #VisitNumber fixed.	
3.2	Changes to <b>Traffic Related APIs</b> :	31 Mar 2016
	- URLs changed to point to version 2 of the APIs.	
	- VCCType renamed to VehicleType (ERP Rates)	
	- EstimatedTime renamed to EstTime (Estimated Travel Times)	
	- RoadID renamed to EventID (Road Openings and Road Works)	
	- ImageURL renamed to ImageLink (Traffic Images)	
	- Band renamed to SpeedBand (Traffic Speed Bands)	
3.3	Changes to API Response Size:	08 Aug 2016
	- Taxi Availability API now returns 500 records per call.	
	- <b>Traffic Images API</b> now returns 70 records per call.	
	- Changes are reflected on Page 5, and on respective API URLs.	
3.4	Changes to API authentication – now requiring only AccountKey.	01 Nov 2016
3.5	Updated attribute description for location coordinates of <b>Bus Arrival API</b> .	23 Nov 2016
3.6	Traffic Images API now returns all records per call.	14 Dec 2016



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## 1. MAKING API CALLS

API calls need to be made programmatically in regular intervals to obtain the constant stream of data for your respective development or research needs. For illustration purposes, an API call is made below via a third-party HTTP web client – Request Maker.

Steps to making an API call:

- 1. Go to <a href="http://requestmaker.com/">http://requestmaker.com/</a>
- 2. At the top right corner of the page, set request type to GET.
- 3. Enter the URL (refer to subsequent pages in this document) in the field **Request URL**.
- 4. Enter your AccountKey under Request Headers.
- 5. **(OPTIONAL STEP)** The "accept" header allows you to specify the response format of your API call. Default is JSON. Specify "application/atom+xml" for XML.
- 6. Click on the Submit button.

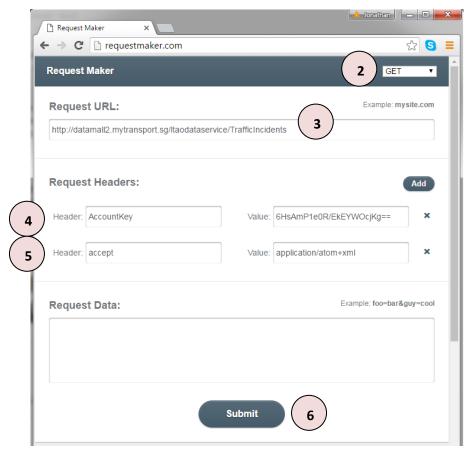


Figure 2-1



Figure 2-2 below shows the JSON response of an API call made for Traffic Incidents dataset. This is displayed under the **Response Body** section of the Request Maker web client.

## Response Body:

{"odata.metadata":"http://datamall2.mytransport.sg/ltaodataservice/\$metadata#IncidentSet","value": [{"Type":"Vehicle breakdown","Latitude":1.29729341989,"Longitude":103.783249374541,"Message":" (30/3)11:58 Vehicle breakdown on AYE (towards MCE) before Buona Vista Exit."},{"Type":"Vehicle breakdown","Latitude":1.35348252781385,"Longitude":103.857004104426,"Message":"(30/3)11:57 Vehicle breakdown on CTE (towards AYE) after AMK Ave 1 Exit."}, Type":"Roadwork","Latitude":1.33436584010419,"Longitude":103.81185924253,"Message":"(30/3)11:35 Roadworks on PIE (towards Tuas) before Eng Neo Ave. Avoid lane 5."}, Type": "Roadwork", "Latitude": 1.33549660381845, "Longitude": 103.784323457651, "Message": "(30/3)11:35 Roadworks on Bukit Timah Road (towards Woodlands) after Holland Link. Avoid left lane."}, "Type":"Roadwork","Latitude":1.30938768067432,"Longitude":103.936034289713,"Message":"(30/3)11:05 Roadworks on ECP (towards City) after East Coast Park Carpark F3 Exit. Avoid lane 1."}, Type": "Roadwork", "Latitude": 1.31091904923227, "Longitude": 103.772132623057, "Message": "(30/3)11:05 Roadworks on Clementi Road (towards Dover Road) after Commonwealth Avenue West. Avoid right lane."}, "Type":"Roadwork","Latitude":1.34265055004086,"Longitude":103.715380012527,"Message":"(30/3)11:04 Roadworks on Boon Lay Way (towards Tuas) after Corporation Road. Avoid left lane."}, "Type":"Roadwork","Latitude":1.35074809802937,"Longitude":103.712703168431,"Message":"(30/3)11:04 Roadworks on Corporation Road (towards Boon Lay Avenue) after Jurong West Avenue 2. Avoid right lane."},("Type":"Roadwork","Latitude":1.2952256526801,"Longitude":103.769592920176,"Message" (30/3)11:04 Roadworks on Clementi Road (towards West Coast Road) after Kent Ridge Crescent. Avoid left lane."},{"Type":"Roadwork","Latitude":1.29470450250127,"Longitude":103.806086792598,"Message": (30/3)11:04 Roadworks on Commonwealth Avenue (towards City) after Margaret Drive. Avoid left lane."}, {"Type": "Roadwork". "Latitude": 1.329820039382. "Longitude": 103.842219401974. "Message": "(30/3)11:04

Figure 2-2: API (JSON) Response as shown on Request Maker.

With the exception of the following 3 APIs listed below (see Table 1), API responses returned are limited to 50 records of the dataset per call. To retrieve subsequent records of the dataset, you need to append the **\$skip operator** to the API call (URL).

For example, to retrieve the next 50 records (51st to the 100th), the API call should be:

http://datamall2.mytransport.sq/ltaodataservice/TrafficIncidents?**\$skip**=50

To retrieve the following set of 50 records, append '**?\$skip=100**', and so on. Just remember, each URL call returns only a max of 50 records!

API	Response Size
Bus Arrival	N.A. Depends on parameter supplied.
Taxi Availability	500
Traffic Images	All records

Table 1: API Response Size



Here's an example of how you can retrieve the data programmatically. This example is coded in Python 2.7. As mentioned previously, this API call only returns the first 50 records.

```
import json
import urllib
from urlparse import urlparse
import httplib2 as http #External library
if name ==" main ":
    #Authentication parameters
   headers = { 'AccountKey' : '6HsAmPleOR/EkEYWOcjKg==',
                'accept' : 'application/json'} #this is by default
   #API parameters
   uri = 'http://datamall2.mytransport.sg/' #Resource URL
   path = '/ltaodataservice/TrafficIncidents?'
   #Build query string & specify type of API call
   target = urlparse(uri + path)
   print target.geturl()
   method = 'GET'
   body = ''
    #Get handle to http
   h = http.Http()
    #Obtain results
    response, content = h.request(
       target.geturl(),
       method,
       body,
       headers)
    #Parse JSON to print
    jsonObj = json.loads(content)
   print json.dumps(jsonObj, sort keys=True, indent=4)
   #Save result to file
   with open ("traffic incidents.json", "w") as outfile:
        #Saving jsonObj["d"]
        json.dump(jsonObj, outfile, sort keys=True, indent=4,
ensure ascii=False)
```



# 2. API DOCUMENTATION

The following lists all real-time / dynamic datasets that are refreshed at regular intervals and served out via APIs. Specification for each API can be found in the rest of this document.

	Public-Transport Related (Total 5)	Description
1	Bus Arrival	Returns real-time Bus Arrival information for Bus Services at a queried Bus Stop, including: Estimated Time of Arrival (ETA), Estimated Location, Load info (i.e. how crowded the bus is).
2	Bus Services	Returns detailed service information for all buses currently in operation, including: first stop, last stop, peak / offpeak frequency of dispatch.
3	Bus Routes	Returns detailed route information for all services currently in operation, including: all bus stops along each route, first/last bus timings for each stop.
4	Bus Stops	Returns detailed information for all bus stops currently being serviced by buses, including: Bus Stop Code, location coordinates.
5	Taxi Availability	Returns location coordinates of all Taxis that are currently available for hire. Does not include "Hired" or "Busy" Taxis.
	Traffic Related (Total 10)	Description
6	Carpark Availability	Returns no. of available lots for carparks in major shopping malls and developments within Orchard, Marina, HarbourFront, Jurong Lake District.
7	ERP Rates	Returns ERP rates of all vehicle types across all timings for each zone.
8	Estimated Travel Times	Returns estimated travel times of expressways (in segments).
9	Faulty Traffic Lights	Returns alerts of traffic lights that are currently faulty, or currently undergoing scheduled maintenance.
10	Road Openings	Returns all planned road openings.
11	Road Works	Returns all road works being / to be carried out.
12	Traffic Images	Returns links to images of live traffic conditions along expressways and Woodlands & Tuas Checkpoints.
13	Traffic Incidents	Returns incidents currently happening on the roads, such as Accidents, Vehicle Breakdowns, Road Blocks, Traffic Diversions etc.
14	Traffic Speed Bands	Returns current traffic speeds on expressways and arterial roads, expressed in speed bands.
15	VMS / EMAS	Returns traffic advisories (via variable message services) concerning current traffic conditions that are displayed on EMAS signboards along expressways and arterial roads.



## 2.1 BUS ARRIVAL

URL	http://datamall2.mytranspo	rt.sg/ltaodataser	vice/BusArrival
Description	Returns real-time Bus Arrival information for Bus Service including: Estimated Time of Arrival (ETA), Estimated Loc		r Bus Services at a queried Bus Stop,
<b>Update Freq</b>	1 minute		
	Re	quest	
Parameters	Description	Mandatory	Sample
BusStopID	Bus stop reference code	Yes	83139
ServiceNo	Bus service number	No	15
SST	Request for ETA in SST	No	True (case sensitive; default: False)
	Res	ponse	
Attributes	Description		Example
ServiceNo	Bus service number		15
Status	Bus Status: In Operation Not In Operation		In Operation
Operator	Transport Operator code:  SBST SMRT		SBST
OriginatingID	Reference code for first bus stop in this service's route sequence.		77009
TerminatingID	Reference code for last bus stop in this service's route sequence.		77131
NextBus	Attributes for next approach	ning bus	
SubsequentBus	Attributes for subsequent bus		
SubsequentBus3	Attributes for third oncoming bus		
^ EstimatedArrival	ETA date-time in GMT (defa	ult), <u>OR</u>	2015-03-02T23:20:36+00:00
	ETA date-time in SST (if SST	= True)	2015-03-03T07:20:24+08:00
^ Latitude	Estimated location coordina		1.42117943692586
^ Longitude	point of published data. Values will be "0" if bus has yet to leave the interchange.		103.831477233098
^ VisitNumber	Ordinal value of the $n^{th}$ visit of this vehicle at this bus stop; $1=1^{st}$ visit, $2=2^{nd}$ visit.		1
^ Load	Bus occupancy / crowding:  Seats Available Standing Available Limited Standing		Standing Available
^ Feature	Indicates wheel-chair accessible bus:  "WAB"  (blank)		WAB

<sup>^</sup> Values of real-time attributes may occasionally <u>NOT</u> appear on the API response, i.e. empty values ("") or null or "0", if this API service is temporarily unavailable during server downtime etc. You are advised to factor such occurrences in your processing logic.



#### **Sample API Calls**

#### Example 1:

http://datamall2.mytransport.sg/ltaodataservice/BusArrival?BusStopID=83139&SST=True (refer below for sample response)

#### Example 2:

http://datamall2.mytransport.sg/ltaodataservice/BusArrival?BusStopID=83139&ServiceNo=15 (this API call will return Bus Arrival info for <u>ONLY</u> Bus 15)

```
Sample Response for Example 1:
  "odata.metadata":
"http://datamall2.mytransport.sg/ltaodataservice/$metadata#BusArrival/@Element",
  "BusStopID": "83139",
  "Services": [
    {
      "ServiceNo": "15",
      "Status": "In Operation",
      "Operator": "SBST",
      "OriginatingID": "77009",
      "TerminatingID": "77009",
      "NextBus": {
        "EstimatedArrival": "2016-04-05T10:41:03+08:00",
        "Latitude": "1.3154806666666667",
        "Longitude": "103.9059165",
        "VisitNumber": "1",
        "Load": "Standing Available",
        "Feature": "WAB"
      "SubsequentBus": {
        "EstimatedArrival": "2016-04-05T10:42:43+08:00",
        "Latitude": "1.320955666666666",
        "Longitude": "103.90524583333334",
        "VisitNumber": "1",
        "Load": "Seats Available",
        "Feature": "WAB"
      "SubsequentBus3": {
        "EstimatedArrival": "2016-04-05T10:49:53+08:00",
        "Latitude": "1.333487166666666",
        "Longitude": "103.90412733333334",
        "VisitNumber": "1",
        "Load": "Seats Available",
        "Feature": "WAB"
      }
    },
      "ServiceNo": "150",
      "Status": "In Operation",
      "Operator": "SBST",
      "OriginatingID": "82009",
      "TerminatingID": "82009",
      "NextBus": {
        "EstimatedArrival": "2016-04-05T10:51:50+08:00",
        "Latitude": "0",
        "Longitude": "0",
        "VisitNumber": "1",
        "Load": "Seats Available",
        "Feature": "WAB"
```



```
"SubsequentBus": {
      "EstimatedArrival": "2016-04-05T11:06:50+08:00",
      "Latitude": "0",
      "Longitude": "0",
      "VisitNumber": "1",
      "Load": "Seats Available",
      "Feature": ""
    },
    "SubsequentBus3": {
      "EstimatedArrival": "2016-04-05T11:21:50+08:00",
      "Latitude": "0",
      "Longitude": "0"
      "VisitNumber": "1"
      "Load": "Seats Available",
      "Feature": ""
    }
  },
    "ServiceNo": "155",
    "Status": "In Operation",
    "Operator": "SBST",
    "OriginatingID": "52009",
    "TerminatingID": "52009",
    "NextBus": {
      "EstimatedArrival": "2016-04-05T10:44:06+08:00",
      "Latitude": "1.31875283333333334",
      "Longitude": "103.90242416666666",
      "VisitNumber": "1",
      "Load": "Seats Available",
      "Feature": "WAB"
    },
    "SubsequentBus": {
      "EstimatedArrival": "2016-04-05T11:10:19+08:00",
      "Latitude": "1.3290793333333333",
      "Longitude": "103.87977033333334",
      "VisitNumber": "1",
      "Load": "Seats Available",
      "Feature": "WAB"
    "SubsequentBus3": {
      "EstimatedArrival": "",
      "Latitude": "",
      "Longitude": ""
      "VisitNumber": "",
      "Load": "",
"Feature": ""
  }
1
```



## **Advisement on Front-End Implementation Logic**

### 1. [EstimatedArrival] Referencing Singapore Standard Time (SST)

Applications should reference the SST, and NOT the mobile device time in deriving the bus arrival duration. To illustrate:

#### **Reference Time:**

Singapore Standard Time: 08:40 am Mobile Device Time: 08:35 am \*API EstimatedArrival: 08:43 am

#### **Derivation of Bus Arrival Duration:**

**Using SGP Time** 

**Using Mobile Device Time** 

\*API EstimatedArrival – Singapore Standard Time = 3 mins



<sup>\*</sup>API EstimatedArrival – Mobile Device Time = 8 mins



<sup>\*</sup>Assumes EstimatedArrival in SST. If you obtain this in (the default) GMT, remember to include +8 hours (to convert to SST) before deriving the Bus Arrival Duration.

### 2. [EstimatedArrival] Rounding of Seconds

All derived bus arrival duration should be rounded down to the nearest minute.

## **Examples:**

Derived duration: 3:49 mins
Display duration: "3 min"

Derived duration: 2:07 mins
Display duration: "2 min"

Derived duration: 1:59 mins
Display duration: "1 min"

Derived duration: 0:59 mins Display duration: "Arr"



#### 3. [EstimatedArrival] Display of Messages for NO ETA Scenarios

#### a. Bus is in operation.

- <Status> reflects "In Operation".
- <EstimatedArrival> reflects ETA.

### b. Bus is in operation, but no estimated timing available.

- <Status> reflects "In Operation".
- <EstimatedArrival> is empty "" or null.

## c. Bus is not in operation.

- <Status> reflects "Not In Operation".
- <EstimatedArrival> is empty "" or null.

For scenarios (b) and (c), you may display the following in-app message, or any other appropriate / user-friendly messages.

Scenario (b): "No Est. Available"
Scenario (c): "Not Operating Now"

## 4. [EstimatedArrival] Availability & Display of ETAs Outside Operating Hours

It is possible for ETAs to appear on the API response (illustrated below) even though buses are not operating at the point of API call. Such scenarios include:

- a. Before first buses leave the Bus Interchanges / Depots in the mornings.
- b. When last buses at night are running behind schedule and yet to reach the terminating stops.
  - <Status> reflects "Not In Operation".
  - <EstimatedArrival> reflects ETA.

Under such scenarios, you should display the ETAs as opposed to "Not Operating Now". Only when there are no ETAs present, should appropriate messages be displayed – refer to advisement item 3.



## 5. [Load] Colour Scheme Adoption

You may adopt this colour scheme to serve as visual indicators for the various loading values:

- [Green] Seats Available
- [Amber] Standing Available
- [Red] Limited Standing

You are given the flexibility for the manner in which you display the colours, i.e. colour bars, coloured timings, and accompanied with legends where appropriate and/or necessary.

## 6. [Feature] Wheelchair Accessible Buses

You are given the flexibility to display any symbols or labels **&** to denote oncoming buses that are wheelchair accessible.

## **Bug Log for Bus Arrival API**

SN	Attributes	Description	Date Logged	Date Fixed
1	#VisitNumber	#VisitNumber does not display '2' for	12-Dec-2015	24-Feb-2016
		services that visit the same bus stop twice.		
2				
3				
4				
5				
6				



# 2.2 BUS SERVICES

URL	http://datamall2.mytransport.sg/ltaoda	taservice/BusServices	
Description	Returns detailed service information for all buses currently in operation, including: first stop, last stop, peak / offpeak frequency of dispatch.		
<b>Update Freq</b>	Ad-Hoc		
	Response		
Attributes	Description	Sample	
ServiceNo	The bus service number	107M	
Operator	Operator for this bus service	SBST	
Direction	The direction in which the bus travels (1 or 2), loop services only have 1 direction	1	
Category	Category of the SBS bus service: EXPRESS, FEEDER, INDUSTRIAL, TOWNLINK, TRUNK, 2 TIER FLAT FEE, FLAT FEE \$1.10 (or \$1.90, \$3.50, \$3.80)	TRUNK	
OriginCode	Bus stop code for first bus stop	64009	
DestinationCode	Bus stop code for last bus stop (similar as first stop for loop services)	64009	
AM_Peak_Freq	Freq of dispatch for AM Peak 0630H - 0830H (range in minutes)	14-17	
AM_Offpeak_Freq	Freq of dispatch for AM Off-Peak 0831H - 1659H (range in minutes)	10-16	
PM_Peak_Freq	Freq of dispatch for PM Peak 1700H - 1900H (range in minutes)	12-15	
PM_Offpeak_Freq	Freq of dispatch for PM Off-Peak after 1900H (range in minutes)	12-15	
LoopDesc	Location at which the bus service loops, empty if not a loop service.	Raffles Blvd	



# 2.3 BUS ROUTES

URL	http://datamall2.mytransport.sg/ltaodataser	vice/BusRoutes	
Description	Returns detailed route information for all services currently in operation, including: all bus stops along each route, first/last bus timings for each stop.		
<b>Update Freq</b>	Ad-Hoc		
	Response		
Attributes	Description	Sample	
ServiceNo	The bus service number	107M	
Operator	Operator for this bus service	SBST	
Direction	The direction in which the bus travels	1	
	(1 or 2), loop services only have 1 direction		
StopSequence	The i-th bus stop for this route	28	
BusStopCode	The unique 5-digit identifier for this physical bus stop	01219	
Distance	Distance travelled by bus from starting location to this bus stop (in kilometres)	10.3	
WD_FirstBus	Scheduled arrival of first bus on weekdays	2025	
WD_LastBus	Scheduled arrival of last bus on weekdays	2352	
SAT_FirstBus	Scheduled arrival of first bus on Saturdays	1427	
SAT_LastBus	Scheduled arrival of last bus on Saturdays	2349	
SUN_FirstBus	Scheduled arrival of first bus on Sundays	0620	
SUN_LastBus	Scheduled arrival of last bus on Sundays	2349	



# 2.4 BUS STOPS

URL	http://datamall2.mytransport.sg/ltaodataservice/BusStops		
Description	Returns detailed information for all bus stops currently being serviced by buses, including: Bus Stop Code, location coordinates.		
<b>Update Freq</b>	Ad-Hoc		
	Response		
Attributes	Description	Sample	
BusStopCode	The unique 5-digit identifier for this physical bus stop	01012	
RoadName	The road on which this bus stop is located	Victoria St	
Description	Landmarks next to the bus stop (if any) to aid in identifying this bus stop	Hotel Grand Pacific	
Latitude	Location coordinates for this bus stop	1.29685	
Longitude	2 Location coordinates for this bus stop	103.853	



# 2.5 TAXI AVAILABILITY

URL	http://datamall2.mytransport.sg/ltaodataservice/Taxi-Availability			
Description	Returns location coordinates of all Taxis that are currently available for hire. Does not include "Hired" or "Busy" Taxis.			
<b>Update Freq</b>	1 min			
	Response			
Attributes	Description	Sample		
Latitude	Latitude location coordinates.	1.35667		
Longitude	Longitude location coordinates.	103.93314		



# 2.6 CARPARK AVAILABILITY

URL	http://datamall2.mytransport.sg/ltaodataservice/CarParkAvailability		
Description	Returns no. of available lots for carparks in major shopping malls and developments within Orchard, Marina, HarbourFront, Jurong Lake District.  (Note: list of carparks available on this API is subset of those listed on One.Motoring and MyTransport Portals)		
<b>Update Freq</b>	1 minute		
	Response		
Attributes	Description	Sample	
CarParkID	A unique code for this carpark	1	
Area	Area of development / building: - Orchard - Marina - Harbfront - JurongLakeDistrict	Marina	
Development	Shopping mall or major landmark where carpark is located	Suntec City	
Latitude	Latitude map coordinates.	1.29375	
Longitude	Longitude map coordinates.	103.85718	
Lots	Number of lots available at point of data retrieval.	352	



# 2.7 ERP RATES

URL	http://datamall2.mytransport.sg/	Itaodataservice/ERPRates	
Description	Returns ERP rates of all vehicle types across all timings for each zone.		
<b>Update Freq</b>	Ad-Hoc		
	Response		
Attributes	Description	Sample	
VehicleType	Classification types: - Passenger Cars	Passenger Cars/Light Goods Vehicles/Taxis	
	<ul><li> Motorcycles</li><li> Light Goods Vehicles</li></ul>		
	<ul><li>Heavy Goods Vehicles</li><li>Very Heavy Goods Vehicles</li></ul>		
	- Taxis		
DayType	Available types: - Weekdays - Saturdays	Weekdays	
StartTime	Start time for this ERP rate	08:00	
EndTime	End time for this ERP rate	08:05	
ZoneID	Zone for this ERP rate	AY1	
ChargeAmount	Chargeable amount	0.5	
EffectiveDate	Rate is effective as of this date (in YYYY-MM-DD format)	2016-02-01	



# 2.8 ESTIMATED TRAVEL TIMES

URL	http://datamall2.mytransport.sg/ltaodataservice/EstTravelTimes			
Description	Returns estimated travel times of expressways (in segments).			
<b>Update Freq</b>	5 minutes			
	Response			
Attributes	Description	Sample		
Name	Expressway	AYE		
Direction	Direction of travel:	1		
	1 – Travelling from east to west,			
	or south to north.			
	2 – Travelling from west to east,			
	or north to south.			
FarEndPoint	The final end point of this whole	TUAS CHECKPOINT		
	expressway in current direction			
	of travel			
StartPoint	Start point of this current	AYE/MCE INTERCHANGE		
	segment			
EndPoint	End point of this current	TELOK BLANGAH RD		
	segment			
EstTime	Estimated travel time in minutes	2		
EstTime	Estimated travel time in minutes	2		



# 2.9 FAULTY TRAFFIC LIGHTS

URL	http://datamall2.mytransport.sg/ltaodataservice/FaultyTrafficLights	
Description	Returns alerts of traffic lights that are <u>currently</u> faulty, or <u>currently</u> undergoing scheduled maintenance.	
Update Freq	2 minutes – whenever there are updates	
	Response	
Attributes	Description	Sample
AlarmID	Technical alarm ID	GL703034136
NodeID	A unique code to represent each unique traffic light node	703034136
Туре	Type of the technical alarm - 4 (Blackout) - 13 (Flashing Yellow)	13
StartDate	YYYY-MM-DD HH:MM:SS.ms	2014-04-12 01:58:00.0
EndDate	YYYY-MM-DD HH:MM:SS.ms (empty field if this is not a scheduled maintenance)	
Message	Canning Message	(23/1)8:58 Flashing Yellow at Bedok North Interchange/Bedok North Street 1 Junc.



# 2.10 ROAD OPENINGS

URL	http://datamall2.mytransport.sg/ltaodataservice/RoadOpenings			
Description	Returns all planned road openings.			
Update Freq	24 hours – whenever there are updates			
	Response			
Attributes	<b>Description</b> Sample			
EventID	ID for this road opening event	RMAPP-201603-0900		
StartDate	Start date for works to be performed for this road opening (in YYYY-MM-DD format)	2016-03-31		
EndDate	End date for works to be performed for this road opening (in YYYY-MM-DD format)	2016-09-30		
SvcDept	Department or company performing this road work	SP POWERGRID LTD - CUSTOMER PROJ (EAST)		
RoadName	Name of new road to be opened	AH SOO GARDEN		
Other	Additional information or messages	For details, please call 62409237		



# 2.11 ROAD WORKS

URL	http://datamall2.mytransport.sg/ltaodataservice/RoadWorks		
Description	Returns all road works being / to be carried out.		
Update Freq	24 hours – whenever there are upd	24 hours – whenever there are updates	
	Response		
Attributes	<b>Description</b> Sample		
EventID	ID for this road work	RMAPP-201512-0217	
StartDate	Start date for the works performed for this road work (in YYYY-MM-DD format)	2015-12-14	
EndDate	End date for works performed for this road work (in YYYY-MM-DD format)	2016-07-31	
SvcDept	Department or company performing this road work	SP POWERGRID LTD - REGIONAL NETWORK CENTRAL	
RoadName	Name of road where work is being performed.	ADAM DRIVE	
Other	Additional information or messages.	For details, please call 67273085	



# 2.12 TRAFFIC IMAGES

URL	http://datamall2.mytransport.sg/ltaodataservice/Traffic-Images		
Description	Returns links to images of live traffic conditions along expressways and Woodlands & Tuas Checkpoints.		
<b>Update Freq</b>	1 to 5 minutes	1 to 5 minutes	
	Response		
Attributes	Description	Sample	
CameraID	A unique ID for this camera	5795	
Latitude	Latitude map coordinates	1.326024822	
Longitude	Longitude map coordinates	103.905625	
ImageLink	Link for downloading this image.	https://s3-ap-southeast- 1.amazonaws.com/mtpdm/2016-03-29/18- 32/5795_1822_20160329182706_c3e176.jpg	



# 2.13 TRAFFIC INCIDENTS

URL	http://datamall2.mytransport.sg/ltaodataservice/TrafficIncidents			
Description	Returns incidents <u>currently</u> happening on the roads, such as Accidents, Vehicle Breakdowns, Road Blocks, Traffic Diversions etc.			
Update Freq	2 minutes – whenever there are up	2 minutes – whenever there are updates		
	Response			
Attributes	<b>Description</b> Sample			
Туре	Incident Types: - Accident - Road Works - Vehicle Breakdown - Weather - Obstacle - Road Block - Heavy Traffic - Misc Diversion - Unattended Vehicle	Vehicle Breakdown		
Latitude	Latitude map coordinates for the start point of this road incident	1.30398068448214		
Longitude	Longitude map coordinates for the start point of this incident	103.919182834377		
Message	Description message for this incident	(29/3)18:22 Vehicle breakdown on ECP (towards Changi Airport) after Still Rd Sth Exit. Avoid lane 3.		



# 2.14 TRAFFIC SPEED BANDS

URL	http://datamall2.mytransport.sg/ltaodataservice/TrafficSpeedBands			
Description	Returns current traffic speeds on expressways and arterial roads, expressed in speed bands.			
<b>Update Freq</b>	5 minutes			
	Response			
Attributes	<b>Description</b> Sample			
LinkID	Unique ID for this stretch of road	103046935		
RoadName	Road Name	SERANGOON ROAD		
RoadCategory	A – Expressways B – Major Arterial Roads C – Arterial Roads D – Minor Arterial Roads E – Small Roads F – Slip Roads G – No category info available	В		
SpeedBand	Speed Band Information. Total: 4  1 – indicates speed range from 0 < 20 2 – indicates speed range from 20 < 40 3 – indicates speed range from 40 < 60 4 – indicates speed range > 60	2		
MinimumSpeed	Minimum speed in KM/H	20		
MaximumSpeed	Maximum speed in KM/H 39			
Location	Latitude and Longitude map coordinates for start and end points for this stretch of road.	1.3220591510051254 103.86246461405193 1.3215993547809128 103.86315591911669		



# 2.15 VMS / EMAS

URL	http://datamall2.mytransport.sg/ltaodataservice/VMS	
Description	Returns traffic advisories (via variable message services) concerning current traffic conditions that are displayed on EMAS signboards along expressways and arterial roads.	
<b>Update Freq</b>	2 minutes	
Response		
Attributes	Description	Sample
EquipmentID	EMAS equipment ID	amvms_v9104
Latitude	Latitude map coordinates of electronic signboard.	1.3927176306916775
Longitude	Longitude map coordinates of electronic signboard.	103.82618266340947
Message	Variable Message being displayed on the EMAS display.	VEH BREAKDOWN SH,AFT U.THOMSON