

91381R



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

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## Level 3 Business Studies 2020

### 91381 Apply business knowledge to address a complex problem(s) in a given global business context

9.30 a.m. Monday 16 November 2020  
Credits: Four









#### RESOURCE BOOKLET

Refer to this booklet to answer the questions for Business Studies 91381.

Check that this booklet has pages 2–3 in the correct order and that neither of these pages is blank.

**YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.**

## RESOURCE A: Comparing Sydney to Melbourne as a launch location

	Solution 1 (Sydney)	Solution 2 (Melbourne)
Electric vehicle charging facilities		
Car ownership rate (2016)		
City population		
Central city population (2019)		

Sources: [https://en.wikipedia.org/wiki/Plug-in\\_electric\\_vehicles\\_in\\_Australia](https://en.wikipedia.org/wiki/Plug-in_electric_vehicles_in_Australia)

<https://blogs.crikey.com.au/theurbanist/2017/08/02/passed-peak-car-ownership/>

<http://www.geonames.org/AU/largest-cities-in-australia.html>

<https://www.melbourne.vic.gov.au/about-melbourne/research-and-statistics/city-population/pages/population-forecasts.aspx>

<https://www.cityofsydney.nsw.gov.au/learn/research-and-statistics/the-city-at-a-glance>

## RESOURCE B: Vehicle servicing/charging process for *Charge Boss*

**Locate *Metro Drive* vehicle when the battery needs charging**  
(*Charge Boss* will receive a notification when the battery charge has reduced to 20% of capacity and soon needs to be recharged)



**Service carried out by *Charge Boss***  
(Service includes cleaning the inside of the *Metro Drive* vehicle and replacing the battery with a fully charged unit)



**Recharge flat batteries at closest EV charging facility**

**Note:** *Charge Boss* operates in both Melbourne and Sydney, and is paid by *Metro Drive* according to the number of services performed per day.

Image source (arrows): <https://www.pngegg.com/en/png-dxbul>

## RESOURCE C: Social media comments

There has been a rise in negative feedback on *Metro Drive*'s Facebook page. Most of the comments are about the vehicles being dirty and the battery being uncharged. Below are some examples:

- Really annoyed. Booked my ride on *Metro Drive*, and the inside of the vehicle was filthy. There were food scraps and wrappers all over the seats and the floor. Won't book with them again. – 35 comments / 45 likes
- Just booked a *Metro Drive* to my job interview across town, only got 2 km before it ran out of power. Battery needed charging. Missed my interview. – 20 comments / 32 likes

## RESOURCE D: Definition of sustainability index for batteries

The sustainability index is an adaptive, multi-criteria and novel technique that is used to

Source: <https://www.sciencedirect.com/science/article/abs/pii/S0306261914004437>

## RESOURCE E: Battery comparison

	Solution A	Solution B
<b>Battery price</b>	\$80	\$120
<b>Battery life</b> (before recharge needed)	4 hours	6 hours
<b>Sustainability index</b> (the higher the index number, the more sustainable the battery)	135	155

## RESOURCE F: Profits for *Metro Drive* in Australia



## RESOURCE G: *Metro Drive's* supply chain

At the end of February 2020, *Charge Boss* closed down, leaving *Langdon's Chargers* as the sole provider of EV battery charging in Australian cities. This put *Langdon's* in a very strong position and enabled it to significantly raise the price it charged *Metro Drive*. This badly affected *Metro Drive's* profits. In response, during May, *Metro Drive* took over the charging and servicing itself to gain greater control over expenses.

## RESOURCE H: Entry of a new competitor

On 1 September 2020, an Italian company, *Lucciola*, entered the Australian market to directly compete with *Metro Drive* in its segment of the EV rental market. *Lucciola* charges the same unlocking cost, but charges only 38 cents per minute to hire its vehicles.

