One of the bad and unsustainable practice I have noticed in Auckland is how trains are being used currently, as we all know trains are the one of the important means of transport and people use it day to day in Auckland and including the whole world. I use trains everyday as my primary source of transport and I’ve observed several problems that could impact the Auckland society and the environment. With the exponentially increasing population in Auckland it will eventually become harder for people to travel by trains thus it will unsustainable. Today’s Auckland rail transport services use diesel as a primary fuel which is known to be one of the most energy efficient fuels and produce little amount of fuel emission compared to other fuels, although diesel are energy efficient they are still harming the environment day by day by producing carbon monoxide. The diesel used could very much add up to a massive amount as there are about 60~ Auckland trains are being used every day and that is just for the Eastern railway line to Britomart. You can imagine how much diesel fuel is consumed for all Auckland railway lines. Diesel driven engines are known to be very loud which in turn affects the people living near the railway line and might cause them to move as they might be annoyed and irritated by the noise.

As I said in above paragraph that Auckland Trains Services are known to be one of the most important means of transport for everybody who needs an alternative transport. Trains are widely used across Auckland and around the world because they provide people the ability to travel to different places in a shorter amount of time and they are much cheaper than cars. Trains were introduced so people could have an alternative transport and not be forced into relying on cars, bus, or bicycles. The bad practice came with the introduction of trains which is linked to the diesel emissions that are stated in the above paragraph along with its problems to Auckland society. This affected the community as they started to use trains in a regular basis to get them one point to another. This increased job opportunities for people who had transport issue, with the introduction of trains they can now work outside their local area and not worry about transport. It also means that people can now choose freely where to live and not be limited to live near their workplace. One of the negative implications of having rail services is that excessive noise pollution produced by trains which impacts society’s living near the railways and stations, it’s made even worse if the town has many railroad grade crossings to pass over, with the resultant constant blowing of the train’s whistle. Another problem is that risk of getting hit by trains while crossing the railway line.

Auckland Transport has been running diesel trains for 60 years and took into account of the increasing population, the noise and the diesel emission in Auckland which lead them to address this issue by redeveloping the Auckland's railway network which will include new Electric passenger trains. With the development of new electric trains, “*KiwiRail is electrifying Auckland’s suburban rail network*”- (from AT.govt.nz website), the development started in 2011 October when they ordered “*one hundred and seventy-one stainless steel cars*” which is equal 57 trains. The current phase of electrifying the network will conclude to a sustainable and modern Auckland transport as the new trains will be running on electricity as their primary and only fuel which is also is produced by a sustainable natural energy. Not only that Auckland Transport decided on 28th april 2014 to undergo another similar project called “City-Rail Link”, it will link britomart to city centre underground and would allow trains to travel beyond britomart as it is currently known as the last and only stop, it will give fast, efficient and direct travel to city for train users. As you can see the government is taking a big step to make Auckland sustainable and a place where our grandchildren could live freely and use these resources such as transport without harming the environment .

From an engineering perspective allowing the use of electric trains and electrifying the Auckland railway network has so many advantages over diesel driven trains. 57 of these trains use electricity as their energy source which is supplied by the overhead wires to the structure called “pantograph” and it is located at the top of the train, pantograph is on a continuous contact with the wire and is responsible for powering up the train's electrical engine. The benefit of having eletrical energy as a power source is that, electricity today is sustainable by being produced and furnished by a natural sources such as wind, water, solar etc, these sources provide unlimited amount of energy being supplied and therefore the electrical energy used by trains will be also unlimited which would save a large amount of money that would've been spent if it was a diesel train. To make eletrical trains even more energy efficient they all come with build in “regenerative braking” allowing electricity to be produced whenever the train use brakes or stops, then its fed back to the train's electrical engine, recycles most of the energy so it can be used again. Electrical trains are considered to be environment friendly as they don't produce any CO2 emissions or little to no sound at all because they have a 25k volts power supply motor that is quiet internally and externally, it also means that there is no exhaust fumes. This would impact residents living near the railway stations in a good way as they won't be annoyed by the diesel train sound anymore and it allow more houses to be built there which would save land. The new electric trains are “*Quieter, smoother and better*”-(TVNZ)which makes the perfect ideal train for the Auckland society.

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