

Pwyllgor Newid Hinsawdd, yr Amgylchedd a Seilwaith /
Climate Change, Environment and Infrastructure Committee
Blaenoriaethau ar gyfer y Chwchedd Senedd / Priorities for the Sixth Senedd
PR118a
Ymateb ychwanegol gan: Cyfeillion y Ddaear Sir Benfro / Additional evidence from:
Pembrokeshire Friends of the Earth

Additional evidence from Mr Wheeler on behalf of Pembrokeshire Friends of the Earth – 31 October 2021

Further to our previous correspondence regarding the 77 new diesel-only trains under construction for Transport for Wales, I thought you would be interested to know that Paul Davies AM has passed on a response he has received from Lee Waters MS on this matter. The deputy minister's letter repeats some misleading/inaccurate claims that Transport for Wales have made previously about this new fleet, which I have responded to. I felt it would be beneficial to make you aware of these so that you are able to robustly challenge the Welsh Government on this.

The attached letter, which I sent to Paul Davies AM to pass on to the deputy minister, explains in detail and is supported by two documents from Transport for Wales (the class 197 interior layout diagram and a table of statistics regarding current and future rolling stock). All three files are included in the attached .zip file. Since this is a large attachment, could you please confirm that you have received it.

Dear Lee Waters MS,

Your ref LW/11343/21

Your confirmation that TfW will be restoring the full rail service to and from Fishguard Harbour from May 2022 was reassuring, thank you.

Regarding the new CAF class 197 Civity trains (hereafter referred to as ‘new trains’ or ‘197s’), the main arguments in your letter appear to be as follows:

1. the 197s will improve punctuality due to more suitable door positioning
2. the 197s will deliver a step change in quality and improve comfort over the older trains
3. the reduction in toilet provision on 197s compared to the existing fleet was necessary because a Universal Access Toilet (UAT) takes up the space of 12 fixed seats
4. trade-offs are necessary and one toilet on a 2-car class 197 and two toilets on a 3-car 197 strikes the right balance between capacity and toilets given the loss of 12 seats per UAT
5. toilet provision on the 197s is in line with new fleets for other UK operators
6. the 197s will produce significantly fewer emissions than the older diesel trains
7. the new trains are capable of being modified to alternative power sources
8. you would like to see more electrification in Wales and are calling for the UK Government to commit to this or devolve rail infrastructure to the Welsh Government

Many of these are misleading or inaccurate claims which have previously been made by TfW, as I detail below.

Door Positions (Item 1)

Do you believe that sacrificing seats, legroom, tables, luggage stacks and/or toilets in order to save a few seconds at stations is desirable on a long-distance train?

KeolisAmey’s chosen door layout for the 197s does exactly that, by increasing standing room and reducing furnishable space; contributing to many of the issues discussed. Therefore, is it really ‘more suitable’?

TfW describe their plans for mark 4 coaches to work alongside the 197s between Manchester and Swansea, as *“going above and beyond our original commitment to transform the Wales and Borders rail service”*¹. The mark 4s have the same door positioning as the existing class 175 units currently used on most Manchester-Swansea services. The ‘original commitment’ was blanket 197s.

Quality And Comfort (Item 2)

Transport for Wales currently have 7 different types of train in service. These differ enormously in terms of quality and in their suitability for long-distance services. The trains the class 197s would primarily be replacing are high-quality and superior to the 197s for the reasons discussed previously such as uncomfortable new seats, fewer tables aligned with windows and reduced toilet provision. The above Business Live article confirms that *“The new GWR trains have been criticised by many passengers for the hardness of their seats.”* and that *“TfW has ordered the same type of seat”*.

1 <https://www.business-live.co.uk/retail-consumer/south-wales-manchester-rail-services-20755532>

The lack of enclosed vestibules on 197s is another quality issue.



Above: an existing train with the same door layout as a 197 illustrates the result; toilets opening directly onto the passenger saloon. This is indecent, unpleasant for passengers sitting nearby and potentially embarrassing and disrespectful to toilet users; a concern raised by the female members of my family. Can this really be described as a ‘step change in quality’ compared to the existing trains where vestibules provide a lobby between toilets and seats?

Toilet Provision (Items 3, 4 & 5)

TfW misleadingly implies that the existing fleets do not provide wheelchair-accessible toilets (UATs) and that every toilet on the new trains is a UAT. In reality the current trains are already equipped with a UAT and the second toilet in the 3-car 197s is a space-saving standard toilet.

Furthermore, ‘the right balance’ between capacity and toilets is defined in the industry’s ‘Key Train Requirements’². For inter-urban services, this is set at 85 seats per toilet. As the table on the next page shows, TfW’s existing long-distance fleet meets this criteria while their new trains do not.

The fifth claim is simply nonsense since new trains vary widely. Class 345s for Crossrail have no toilets at all, while GWR’s 9-car Intercity trains have ten toilets. The recently introduced TransPennine Express (TPE) ‘Nova 2’ trains are included in the table as a comparator.

2 <https://www.raildeliverygroup.com/about-us/publications/12715-ktr-v6/file.html>

Train Type	Fixed Seats	Seating Bays	Airline Seat Spacing	Toilets	Seats Per Toilet
Class 158 (2-car)	134	16	80cm	2	67
Class 175 (2-car)	118	12	84cm	2	59
Class 175 (3-car)	186	22	84cm	3	62
Class 197 (2-car)	116	10	82cm	1	116
Class 197 (3-car)	188	16	82cm	2	94
Class 397 'Nova 2' (5-car)	288	50	Unknown	4	72

Emissions Comparison (Item 6)

There is a difference between greenhouse gas (GHG) and emissions harmful to human health / air quality. In terms of the latter, the new trains are indeed an improvement although it is possible to retrofit older trains to reduce these emissions.

GHG emissions are clearly dependent on fuel efficiency and total diesel mileage. Efficiency varies among the existing fleets and TfW do not make this clear. Class 197s and class 158s appear to be similarly efficient. Class 175s are less economical but hybrid technology is available to significantly improve this³.

Furthermore, if retained it is assumed that the class 158s and 175s would be replaced by 2040 using electric trains with a hydrogen or battery function. This is a maximum of 19 years of diesel emissions from the old fleet compared to a possible 40 years of diesel emissions from the 197s. ScotRail is expected to introduce hydrogen or battery trains to meet their 2035 decarbonisation target, does Wales really want 77 diesel-only trains until around 2060?

Potential For Modification And Electrification (Items 7 & 8)

I welcome the Welsh Government's commitment to electrification on the core ValleyLines and am encouraged by your interest in future rail electrification elsewhere. However, TfW's response to criticism of their new diesel-only trains is unconvincing. While the class 197s could be converted to 'alternative power' this is not 'electric traction'. Conversion to electric traction would have to overcome challenges even greater than those faced by the failed eVoyager project. With both Voyagers (class 22x) and class 197s, *"there is no facility to supply electricity for the traction motors from elsewhere within the unit. This has frustrated potential schemes for creation of a bi-mode Class 22x unit on the grounds of prohibitive cost"*⁴.

As a result, alternative liquid fuels (such as used cooking oil) are the most likely 'decarbonisation' option for 197s. An electric railway is a better railway for many reasons (see the RIA's 'Why Rail Electrification' report⁵), not just decarbonisation. Class 197s would significantly weaken both the business case and the environmental case for electrification wherever they operate, since electrification delivers maximum benefit when all trains using the route are capable of electric operation. The UK Government is very unlikely to fund schemes with a poor case.

³ <https://busnes.senedd.cymru/documents/s95618/EIS5-29-19P4%20Tystiolaeth%20gan%20Angel%20Trains>

⁴ <https://www.ipexconsulting.com/insights/thought-leadership/discontinuous-electrification-repurposing-existing-rolling-stock/>

⁵ https://www.riagb.org.uk/RIA/Newsroom/Why_Rail_Electrification_Report.aspx

Network Rail's Traction Decarbonisation Network Strategy⁶ (TDNS) recommends a mix of 86% electrification, 9% hydrogen and 5% batteries. Most of the battery and hydrogen trains required would benefit from being bi-modes with electric traction, making 197s unsuitable for conversion to fill these roles. It is great to see the Welsh Government prioritising electrification to Swansea by 2029, but does this make sense if class 197s are left wastefully burning diesel (or alternative fuel) 'under the wires'? Moving them elsewhere would simply blight somebody else's electrification prospects.

The TDNS also recommends that *"Procurement of diesel-only vehicles is only undertaken where there is clear strategic and economic rationale for doing so."*⁶ TfW have yet to show a clear rationale for replacing the class 158 and class 175 trains – in fact it appears passengers would be better off if they were retained. We can have unsuitable new trains now until nearly 2060, or we can wait 10-15 years with the old trains while we design a suitable, future-proof, new fleet.

Kind regards,
Thomas J. Wheeler

"We know where this story is heading, and we know we must give it a different ending" Sir David Attenborough speaking at the 2021 Earthshot Prize awards.

6 <https://www.networkrail.co.uk/wp-content/uploads/2020/09/Traction-Decarbonisation-Network-Strategy-Interim-Programme-Business-Case.pdf>

Table 2B - Rolling Stock Minimum Requirements and Specifications - Sprinter / Rural Service Type

Service Type: Sprinter/Rural			Min Req applies	Minimum Requirement Introduction Date*		*Where applicable, rolling stock is exempt from the early Minimum Requirement Introduction Date if it can be demonstrated that it will be replaced by new build rolling stock												
				If Not Exempt	If Exempt	Class 158/0	Class TBA CAF Civity (3 car - standard class only)	Class 150/2	Class 153	Class 175/0	Class 175/1	Class 230	Class 170/2	Class 170/2	Class TBA CAF Civity (2 car)	Class TBA CAF Civity (3 car - First class ready)	Class TBA CAF Civity (3 car - First class fitted)	Class TBA CAF Civity (3 car - Decommissioned First class)
Type and Route Information	1	Class																
	2	Type		N/A	N/A	DMU	DMU	DMU	DMU	DMU	DMU	DMU	DMU	DMU	DMU	DMU	DMU	DMU
	3	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	4	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	5	Lease Start Date		N/A	N/A	14/10/2018	See R6.7	14/10/2018	14/10/2018	14/10/2018	14/10/2018	01/04/2019	01/10/2019	01/10/2019	See R6.7	See R6.7	31/12/2024	See R6.7
	6	Lease End Date		N/A	N/A	31/10/2022	16/10/2033	31/11/2023	31/10/2022	31/05/2022	31/05/2022	16/10/2033	16/10/2033 [REDACTED]	16/10/2033 + [REDACTED]	16/10/2033	31/12/2024	16/10/2033	31/12/2024
	7	Number of units at the Start Date		N/A	N/A	24	0	36	8	11	16	0	0	0	0	0	0	0
	8	Number of units (max number used during term of Grant Agreement)		N/A	N/A	24	12	36	13	11	16	5	4	8	51	Up to 7, depending on First Class deployment strategy Total of 14 "First class ready" or "Decommissioned First class"	14	From 7 to 14, depending on First Class deployment strategy Total of 14 "First class ready" or "Decommissioned First class"
	9	Vehicles / Unit		N/A	N/A	2	3	2	1	2	3	3	2	3	2	3	3	3
	10	Specified Routes		N/A	N/A	Birmingham/Shrewsbury Aberystwyth/Pwllheli Holyhead	Milford Haven - Cardiff - Manchester/Holyhead	Llandudno - Blaenau Ffestiniog Shrewsbury - Crewe West Wales, Heart of Wales & Shrewsbury - Crewe	West Wales, Heart of Wales & Shrewsbury - Crewe	Milford Haven - Cardiff - Manchester/Holyhead	Milford Haven - Cardiff - Manchester/Holyhead	Llandudno - Blaenau Ffestiniog Shrewsbury - Crewe	West Wales, Heart of Wales & Shrewsbury - Crewe	West Wales, Heart of Wales & Shrewsbury - Crewe	Birmingham/Shrewsbury Aberystwyth/Pwllheli Holyhead Milford Haven - Cardiff - Manchester/Holyhead	Milford Haven - Cardiff - Manchester/Holyhead	Milford Haven - Cardiff - Manchester/Holyhead	Milford Haven - Cardiff - Manchester/Holyhead
Minimum Requirements	11	PRM / RVAR Compliant (* Mandatory compliance by December 31st 2019)	✓	31/12/2019	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	12	Seats aligned with windows		N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	13	PRM Compliant Toilets	✓	31/12/2019	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	14	CET Toilet	✓	31/12/2019	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	15	Baby changing facilities	✓	31/12/2019	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	16	Power Supply available at all seats	✓	31/10/2020	31/11/2023	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	17	Catering facilities	✓	31/10/2020	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	18	Overhead racks throughout train for storing small items of luggage	✓	31/10/2020	31/10/2022	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	19	Facilities for storing large items of luggage within sight/proximity of passengers	✓	31/10/2020	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	20	Storage capacity for pushchairs / prams	✓	31/10/2020	31/10/2022	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	21	Dedicated cycle storage	✓	31/10/2020	31/10/2022	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	22	Flexible storage for cycles		N/A	N/A	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	23	Vehicle will not affect mobile phone signal	✓	31/10/2020	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	24	Passenger Counting system	✓	31/10/2020	31/10/2022	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	25	CCTV (passenger environment)	✓	31/10/2020	31/10/2022	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	26	Wireless internet access	✓	31/10/2020	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	27	Air Conditioning System	✓	31/10/2020	31/11/2023	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	Pacer removal from service	✓	30/09/2020	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
29	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	
30	Seat reservation		N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	
31	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	

Table 2B - Rolling Stock Minimum Requirements and Specifications - Sprinter / Rural Service Type

Service Type: Sprinter/Rural			Min Req applies	Minimum Requirement Introduction Date*		*Where applicable, rolling stock is exempt from the early Minimum Requirement Introduction Date if it can be demonstrated that it will be replaced by new build rolling stock													
	I	Class		If Not Exempt	If Exempt	Class 158/0	Class TBA CAF Civity (3 car - standard class only)	Class 150/2	Class 153	Class 175/0	Class 175/1	Class 230	Class 170/2	Class 170/2	Class TBA CAF Civity (2 car)	Class TBA CAF Civity (3 car - First class ready)	Class TBA CAF Civity (3 car - First class fitted)	Class TBA CAF Civity (3 car - Decommissioned First class)	
General Information	32	Vehicle Length in metres		N/A	N/A	22.57	24.026 - 23.350	20.06	23.21	23.71	23.71 (DMSL) - 23.03 (MSL)	18.12 - 18.37	23.62	23.61 - 23.62	24.026 - 23.350	24.026 - 23.350	24.026 - 23.350	24.026 - 23.350	
	33	Number of vehicles fitted with passenger counting system		N/A	N/A	0	81	18	0	0	0	6	8	24	100	81	81	81	
	34	Year built		N/A	N/A	1989 - 1992	2021 - 2022	1987 - 1988	1987 - 1988	1999 - 2001	1999 - 2001	1979 - 1983	1998 - 2005	1998 - 2005	2021 - 2022	2021 - 2022	2021 - 2022	2021 - 2022	
	35	Age at the Start Date		N/A	N/A	26 - 29	0	31	30 - 31	17 - 19	17 - 19	35 - 39	13 - 20	13 - 20	0	0	0	0	
	36	Max speed in mph		N/A	N/A	90	100	75	75	100	100	60	100	100	100	100	100	100	
	37	Vehicle range limiting factor		N/A	N/A	2560 km	[REDACTED]	3300 km	3300 km	4300 km	4300 km	[REDACTED]	2320 km	2320 km	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	
	38	Flexibility to deploy on other routes		N/A	N/A	Flexible, will go on most routes	Flexible, will go on most routes	Flexible, will go on most routes	Flexible, will go on many routes and short platforms	Cleared for various other routes in Wales	Cleared for various other routes in Wales	Flexible, will go on most routes	Flexible, will go on most routes	Flexible, will go on most routes	Flexible, will go on most routes	Flexible, will go on most routes	Flexible, will go on most routes	Flexible, will go on most routes	
	39	Maximum operating length of train in metres		N/A	N/A	230	214.206	200.6	230	211.35	211.35	54.36 - 55.11	236.2	236.2	192.208	214.206	214.206	214.206	
	40	Remote Fault-finding systems		N/A	N/A	KA fitting [REDACTED] fault finding system	TCMS + OTDR	KA fitting [REDACTED] fault finding system	KA fitting [REDACTED] fault finding system	KA fitting [REDACTED] fault finding system	KA fitting [REDACTED] fault finding system	TCMS + OTDR	KA fitting [REDACTED] fault finding system	KA fitting [REDACTED] fault finding system	TCMS + OTDR	TCMS + OTDR	TCMS + OTDR	TCMS + OTDR	
	41	Vehicle and infrastructure monitoring systems		N/A	N/A	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring	Vibration monitoring
	42	CCTV (forward facing)		N/A	N/A	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	43	Acceleration rate in m/s²		N/A	N/A	0.82	[REDACTED]	0.66	0.61	0.6	0.6	[REDACTED]	0.7	0.7	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	
	44	Deceleration rate in m/s²		N/A	N/A	0.88	[REDACTED]	0.7	0.7	1	1	[REDACTED]	0.98	0.98	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	
	45	Engine Emission Standard		N/A	N/A	Pre emission standards	Euro Stage V	Pre emission standards	Pre emission standards	Euro Stage II	Euro Stage II	Euro Stage III B	Euro Stage II	Euro Stage II	Euro Stage V	Euro Stage V	Euro Stage V	Euro Stage V	
	46	Unit tare weight in tonnes		N/A	N/A	77	[REDACTED]	74	41.2	99.2	146.7	[REDACTED]	91.4	133.7	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	
	47	Unit fully laden weight in tonnes		N/A	N/A	91	[REDACTED]	89.12	47.5	112.78	167.63	[REDACTED]	106.8	157.01	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	
	48	Diesel emission statement		N/A	N/A	• CO: 4 g/kWh • HC: 0.55 g/kWh • NOx: 11.5 g/kWh • PM: 0.46 g/kWh	[REDACTED]	• CO: 0.84 g/kWh • HC: 0.14 g/kWh • NOx: 21.19 g/kWh • PM: 0.11 g/kWh	• CO: 0.84 g/kWh • HC: 0.14 g/kWh • NOx: 21.19 g/kWh • PM: 0.11 g/kWh	• CO: 4 g/kWh • HC: 1.1 g/kWh • NOx: 7 g/kWh • PM: 0.15 g/kWh	• CO: 4 g/kWh • HC: 1.1 g/kWh • NOx: 7 g/kWh • PM: 0.15 g/kWh	[REDACTED]	• CO: 4 g/kWh • HC: 1.1 g/kWh • NOx: 7 g/kWh • PM: 0.15 g/kWh	• CO: 4 g/kWh • HC: 1.1 g/kWh • NOx: 7 g/kWh • PM: 0.15 g/kWh	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	
Capacity Information	49	Standard Class Fixed Seats		N/A	N/A	134	188	111	58	118	186	115	105	170	116	186	158	174	
	50	Standard Class Tip-Up Seats		N/A	N/A	4	8	7	4	16	20	8	13	11	5	8	8	8	
	51	Standard class seating layout (1+2, 2+2, 2+3, longitudinal, etc.)		N/A	N/A	2+2	2+2	2+2 high-backed Chapman seating, mainly uni-directional	2+2 high backed Chapman seating.	2+2	2+2	2+2 bays and longitudinal	2+2 Chapman and Lazarini facing/uni-directional seating	2+2 Chapman and Lazarini facing/uni-directional seating	2+2	2+2	2+2	2+2	
	52	First / Business Class Fixed Seats		N/A	N/A	0	0	0	0	0	0	0	0	7	0	0	16	0	
	53	First / Business class seating layout (1+2, 2+2, 2+3, longitudinal, etc.)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2+1 Chapman and Lazarini facing	N/A	N/A	N/A	N/A	
	54	Wheelchair Spaces per Unit		N/A	N/A	2	2	2	2	2	2	2	2	2	2	2	2	2	
	55	Standing Capacity		N/A	N/A	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	Assume 0.45sqm per standing passenger	
	56	Dedicated cycle storage spaces per unit		N/A	N/A	59	118	96	28	58	91	168	100	143	79	118	100	118	
	57	Flexible storage spaces for cycles per unit		N/A	N/A	2	1	0	4	0	0	2	2	2	1	1	1	1	
	58	Toilets per unit		N/A	N/A	2	2	1	1	2	3	1	2	3	1	2	2	2	
	59	Door position on vehicle (i.e. vehicle end doors or 1/3 and 2/3 positioned doors)		N/A	N/A	Vehicle end doors	1/3 - 2/3	Bi-parting sliding doors at 1/3 and 2/3 position, cab-door sliding	Single leaf sliding plug at vehicle ends	Vehicle end doors	Vehicle end doors	4 single sliding doors	Double leaf, bi-parting sliding plug doors at 1/3 and 2/3 positions	Double leaf, bi-parting sliding plug doors at 1/3 and 2/3 positions	1/3 - 2/3	1/3 - 2/3	1/3 - 2/3	1/3 - 2/3	
	60	Facilities for standing passengers		N/A	N/A	Seat back handles	Seat back handles and grab poles provided	Seat back handles and grab poles provided	Seat back handles	Seat back handles	Seat back handles	Seat back handles and grab poles provided	Seat back handles and grab poles provided	Seat back handles and grab poles provided	Seat back handles and grab poles provided	Seat back handles and grab poles provided	Seat back handles and grab poles provided	Seat back handles and grab poles provided	
	61	Number of fixed tables per vehicle		N/A	N/A	21	16	12	6	10	18	10	19	23	10	16	16	16	
	62	Number of folding tables per vehicle		N/A	N/A	(11 DMS A + 10 DMS B) 18 / 20	(Car A 4, Car B 6, Car C 6) 28 / 46 / 44	(5 DMSL + 7 DMS) 20 / 32	(6 DMSL A + 4 DMSL B) 24	(6 DMSL A, 8 MSL, 4 DMSL B) 26 / 40	(6 DMSL A, 8 MSL, 4 DMSL B) 26 / 28 / 40	(DMS 4, TSL 2, DMS 4) 0	(10 DMCL, 9 DMSL) 24 / 26 / 34	(7 DMCL, 8 MSL, 8 DMSL) 28 / 44	(Car A 4, Car B 6) 28 / 44	(Car A 4, Car B 6, Car C 6) 28 / 46 / 44	(Car A 4, Car B 6, Car C 6) 28 / 46 / 44	(Car A 4, Car B 6, Car C 6) 28 / 46 / 44	
	63	Type of heating and ventilation fitted (air conditioning, pressure ventilation and body side heater, etc.)		N/A	N/A	Vapor-stone original system	HVAC system	Warm air, hot water radiators. No air-con in cab. No ir-con in saloon.	Warm air, hot water radiators. No air-con in cab. No ir-con in saloon.	Soprano cab and saloon air conditioning modules	Soprano cab and saloon air conditioning modules	CAB and Saloon air conditioning	Air conditioning (Saloon and cab (210-273) independent systems). Both AIT (now KBR5)	Air conditioning (Saloon and cab (210-273) independent systems). Both AIT (now KBR5)	HVAC system	HVAC system	HVAC system	HVAC system	
	64	Floor covering (i.e. lino, carpet, etc.)		N/A	N/A	Carpet	Carpet	Polyflor Floor Covering	Carpet	Carpet	Carpet	Polyflor Floor Covering	Carpet	Carpet	Carpet	Carpet	Carpet	Carpet	
	65	Door control system fitted		N/A	N/A	Guard control panel	Guard control panel/ Driver control	Guard control panel	Guard control panel	Guard control panel	Guard control panel	Guard control panel	Guard control panel	Guard control panel	Guard control panel/ Driver control	Guard control panel/ Driver control	Guard control panel/ Driver control	Guard control panel/ Driver control	
66	GPS system fitted		N/A	N/A	KA fitting [REDACTED] fault finding system	TL&M compliant GPS	KA fitting [REDACTED] fault finding system	KA fitting [REDACTED] fault finding system	KA fitting [REDACTED] fault finding system	KA fitting [REDACTED] fault finding system	TL&M compliant GPS	KA fitting [REDACTED] fault finding system	KA fitting [REDACTED] fault finding system	TL&M compliant GPS	TL&M compliant GPS	TL&M compliant GPS	TL&M compliant GPS		

Table 2B - Rolling Stock Minimum Requirements and Specifications - Sprinter / Rural Service Type

Service Type: Sprinter/Rural			Min Req applies	Minimum Requirement Introduction Date*		*Where applicable, rolling stock is exempt from the early Minimum Requirement Introduction Date if it can be demonstrated that it will be replaced by new build rolling stock												
				If Not Exempt	If Exempt	Class 158/0	Class TBA CAF Civity (3 car - standard class only)	Class 150/2	Class 153	Class 175/0	Class 175/1	Class 230	Class 170/2	Class 170/2	Class TBA CAF Civity (2 car)	Class TBA CAF Civity (3 car - First class ready)	Class TBA CAF Civity (3 car - First class fitted)	Class TBA CAF Civity (3 car - Decommissioned First class)
Rolling Stock improvements	68	Refurbishment 1 - Start Date				14/10/2018	N/A	14/10/2018	01/06/2019	14/10/2018	14/10/2018	N/A	01/10/2019	01/10/2019	N/A	14/10/2024	N/A	14/10/2024
	69	Refurbishment 1 - End Date				07/10/2019	N/A	19/10/2019	28/10/2019	31/12/2019	31/12/2019	N/A	01/02/2020	01/02/2020	N/A	14/12/2024	N/A	14/12/2024
	70	Refurbishment 1 - Scope				PRM + Train wrap to rebrand, internal refurbishment, including seat cover replacement, grab pole repainting and floor covering replacement to match TWV branding.	N/A	PRM + Train wrap to rebrand, internal refurbishment, including seat cover replacement, grab pole repainting and floor covering replacement, vinyls on toilet walls to match TWV branding, CCTV+Pax counting	PRM + Train wrap to rebrand, internal refurbishment, including seat cover replacement, grab pole recoating, carpets/flooring renewal and seat power at bay locations	Train wrap to rebrand, internal refurbishment, including seat cover replacement, grab pole repainting and floor covering replacement, vinyls on toilet walls to match TWV branding.	Train wrap to rebrand, internal refurbishment, including seat cover replacement, grab pole repainting and floor covering replacement, vinyls on toilet walls to match TWV branding.	N/A	Rebranding, at seat power, passenger counting system installation	Rebranding, at seat power, passenger counting system installation	N/A	Fitment of 16 first class seats (replacing 28 standard seats) to turn these units into "Class TBA CAF Civity (3 car - First class fitted)"	N/A	First class commissioning to turn these units into "Class TBA CAF Civity (3 car - First class fitted)"
	71	Refurbishment 2 - Start Date				14/10/2018	N/A	N/A	N/A	14/10/2018	14/10/2018	N/A	01/01/2027	01/01/2027	N/A	N/A	N/A	N/A
	72	Refurbishment 2 - End Date				07/10/2019	N/A	N/A	N/A	31/12/2019	31/12/2019	N/A	31/12/2017	31/12/2017	N/A	N/A	N/A	N/A
	73	Refurbishment 2 - Scope				Refurbishment of HVAC system to provide fully functioning air conditioning	N/A	N/A	N/A	Installation of at seat power	Installation of at seat power	N/A	Full interior and Passenger equipment midlife refurbishment	Full interior and Passenger equipment midlife refurbishment	N/A	N/A	N/A	N/A
	74	Passenger Assist Bluetooth Beacon fitted by 2020				Yes	By vehicle introduction date	Yes	Yes	Yes	Yes	Yes	Yes	Yes	By vehicle introduction date	By vehicle introduction date	By vehicle introduction date	By vehicle introduction date
	75	[REDACTED] PIS fitted				No	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
	76	3-pin and USB power sockets at every seat				USB sockets to be fitted at all airline seats in addition to 3 pin sockets at bay seats	Yes	3-pin and USB sockets to be fitted at every seat	3-pin to be fitted at bay seats	3-pin and USB sockets to be fitted at every seat	3-pin and USB sockets to be fitted at every seat	3-pin and USB sockets to be fitted at every seat	3-pin to be fitted at bay seats with USB sockets at all other seats	Yes	Yes	Yes	Yes	Yes
	77	End gangways fitted				Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes
	78	On-Train Data Recorder (OTDR) data harvester				To be fitted	N/A	To be fitted	To be fitted	To be fitted	To be fitted	To be fitted	To be fitted	To be fitted	N/A	N/A	N/A	N/A
	79	Wheel Slip/ Slide Protection (WSP) system fitted				Yes	Yes	To be fitted	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	80	On Board Energy Storage (OBES) fitted				No	No	No	No	No	No	Yes, to improve train acceleration	No	No	No	No	No	No
	81	Twin Cat 7 ethernet backbones to enable gigabit transmission fitted				No	By vehicle introduction date	No	No	No	No	No	No	No	By vehicle introduction date	By vehicle introduction date	By vehicle introduction date	By vehicle introduction date
	82	Driver Advisory System (DAS) to be fitted if not already installed				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	83	Selective Door Opening (SDO) fitted				No	By vehicle introduction date	No	No	No	No	No	No	No	By vehicle introduction date	By vehicle introduction date	By vehicle introduction date	By vehicle introduction date
	84	ETCS fitted				Yes	To be fitted to 21 CAF Civity units by vehicle introduction date	No	No	No	No	No	No	No	To be fitted to 21 CAF Civity units by vehicle introduction date	To be fitted to 21 CAF Civity units by vehicle introduction date	To be fitted to 21 CAF Civity units by vehicle introduction date	To be fitted to 21 CAF Civity units by vehicle introduction date

Further written evidence from Mr Wheeler – 24 November 2021:
Reply from Transport for Wales to some of the questions raised by Mr Wheeler

I have since received a message from Alexander Bryant-Evans, an Interim Stakeholder Manager at Transport for Wales responding to some of my earlier questions regarding the interaction between decarbonisation and the planned new fleet of 77 diesel-only class 197s. He made a number of valid points and highlighted that TfW are aiming “to reach carbon net-zero by 2030”.

The tri-mode trains for the ‘Metro’, which Alexander mentioned, illustrate a successful application of the Future Generations Act’s ‘Five Ways of Working’. They are suitable for the **long-term** and **integrated** with the current infrastructure plans, able to utilise the Core Valley Lines (CVL) electrification. The tri-mode capability makes it possible to benefit from limited electrification while waiting for more. This **prevents** waste which would be incurred if the trains had to be replaced with electric ones following electrification.

Beyond the CVL, I agree that diesel is currently required for non-electrified sections. However, last year Network Rail published their interim Traction Decarbonisation Network Strategy (TDNS). This report has shown KeolisAmey’s decision in 2018, to order diesel-only rather than bi-mode trains, to be incompatible with the Future Generations Act. They did not take account of the long-term and so failed to prevent future waste. The interim TDNS report recommended that *“Procurement of diesel-only vehicles is only undertaken where there is clear strategic and economic rationale for doing so”* and revealed the extent of electrification required to reach net zero.

While the ‘Metro’ is clearly heading in the right direction, for TfW to become a net-zero business by 2030 the rest of the network also needs to be addressed. As Alexander suggested, this could be achieved by transferring the class 197s to other train operators. However, this only moves the problem elsewhere and, with the extent of electrification recommended in the TDNS, there would not be sufficient work for all the class 197s on-order. Diesel-only units are an impediment to future electrification; the more completed, the less rail electrification Britain will be able to utilise in the 2050s. Unless of course the government is happy to waste the embodied carbon by scrapping these new trains long before they are life expired.

Alexander’s e-mail did not discuss the downgraded passenger accommodation expected as a result of the new fleet, which would be an impediment to modal shift.

Message from Mr Wheeler - 25 November 2021: Although TfW have now answered some of my questions, my concerns regarding the new fleet of diesel-only trains remain as does my belief that urgent action is required by the Welsh Government to resolve them. The material I sent on 31st October provides far greater detail than yesterday’s e-mail and may be useful if TfW/WG attempt to mislead the committee on this matter as they have previously tried to mislead me.