



Response to:

**Transport East's draft
Transport Strategy and ISA
consultation**

Introduction

Transport Action Network (TAN) would like to welcome the opportunity to comment on Transport East's draft Transport Strategy and Integrated Sustainability Appraisal (ISA). There is much to be commended within the strategy but there appears an unacknowledged contradiction within it: that it's possible to reduce carbon emissions quickly enough and achieve modal shift while building new roads and increasing traffic. This is not helped by an Integrated Sustainability Appraisal that fails to flag up this and other important issues, while making claims that do not stand up to scrutiny.

While we have taken care to illustrate our concerns, we have not gone through the documents line by line to pick out everything we support or object to. This would have been too onerous a task and made a long response even longer. Nevertheless, we believe that the ISA really needs that level of scrutiny so that it is properly able to inform the decision makers as to the real impacts that the preferred strategy would be likely to have.

Headlines

The strategy contains a lot of good ambitions and priorities but unfortunately it is fundamentally flawed. It contains no road transport carbon budget (or even an overall regional budget) or pathway that can be used to assess whether the strategy is on track to reduce carbon emissions quickly enough. A 2040 target for net-zero is warmly welcomed but this is meaningless unless there is a clear and unambiguous pathway to achieve it. This is entirely missing.

Alongside this failure to provide a pathway to decarbonisation, no modelling appears to have been done for the different climate scenarios as outlined in the Government's Green Book. This is important because consideration of climate change scenarios of 2°C or 4°C will not only affect the risk registers for flooding, storm damage, coastal erosion, etc. for specific locations, but also economic growth and population forecasts and location, with potentially big effects on traffic demand forecasts. These could lead to significantly different future scenarios that have not been considered within this draft strategy.

Disappointingly, the draft transport strategy also contains significant road building ignoring the impact this will have on driving up traffic, congestion and emissions. Instead, it and the Integrated Sustainability Appraisal (ISA) claim new roads will do the opposite, mostly ignoring the proven concept of induced traffic (there are a few asides about this but then it is mostly ignored). Alongside this failure, there is no consideration given to how new roads, which make it easier and cheaper to drive, will undermine public transport and therefore some of the central aims of the draft strategy to achieve modal shift and reduce inequality.

This is the fundamental problem at the heart of the strategy. While there is mention of demand management, there isn't much detail as to how this might work, how impactful it

would be, and how it squares with expanding road capacity and making driving easier and cheaper.

Overall, TAN strongly supports the:

- 2040 net-zero target
- Emphasis on active travel and public transport and modal shift
- Focus on shifting freight from road to rail
- Vision Zero (road safety) ambition
- Aim to reduce the need to travel

TAN strongly objects to the:

- Lack of carbon budget or pathway
- Monitoring carbon emissions on a 3 – 5 year cycle
- Substantial road building proposed
- Integrated Sustainability Appraisal (as currently drafted)

Unfortunately, none of the issues highlighted above are helped by a poorly drafted Integrated Sustainability Appraisal. The ISA does not properly assess the wider impacts of road building, particularly on traffic levels and short to medium term carbon emissions, nor how this will interact and undermine public transport and active travel. This will then undermine attempts to achieve modal shift and reach net-zero by 2040.

More worryingly, the ISA fails to fully consider equality and health issues, when these were flagged as a concern during scoping, often giving road building positive scores for these aspects when those most disadvantaged don't own a car and need investment in sustainable alternatives. Additionally, increasing car use will lead to a more sedentary lifestyle amongst the population, increasing pressure on the NHS, which is hardly a positive health outcome.

Finally, given we are in a climate emergency with potentially only 5 years left of the region's carbon budget as illustrated by the Tyndall Centre's carbon budget (Annex 1), the proposal to monitor emissions on a 3 – 5 year cycle is completely unacceptable as well as nonsensical. There needs to be annual reporting with the commitment to take urgent action to address any deviation from the required pathway to keep the region within its carbon budget.

Detailed comments

The vision (page 8)

A thriving economy for the East, with fast, safe, reliable, and resilient transport infrastructure driving forward a future of inclusive and sustainable growth for decades to come

Our issues with this are:

- ‘fast’ doesn’t necessarily go with ‘safe’, and that convenience is perhaps a better objective to include
- having both reliable and resilient is a duplication as a reliable transport infrastructure would by definition have to be resilient as otherwise it wouldn’t be reliable.
- the definition needs to go beyond infrastructure to include services.

What does success look like? (page 9)

If we are able to deliver our transport strategy successfully by 2050, our region will have:

- *Better public transport connections accessible to everyone*
- *Places that make it easy and attractive for people to move around sustainably*
- *More reliable business and freight journeys, due to less congestion and fewer incidents*
- *A healthier, more active population – by making it easier to walk and cycle more often*
- *Cleaner, greener transport, helping to protect our local environment and the world for future generations*
- *People needing to make fewer journeys, partly due to better online connections bringing services into our homes*

There is little to argue with here and these outcomes are ones we would strongly support. Unfortunately though, while it may be possible to achieve aspects of these, with so much emphasis on roadbuilding and removing bottlenecks and congestion it’s highly unlikely that significant improvements to public transport will be achieved or that congestion will be reduced. Apart from road building diverting scarce resources away from active travel and public transport, expanding road capacity (which makes it easier and cheaper to drive), will divert people and fares away from public transport, undermining its economic viability. The increase in network wide congestion that this will cause will further undermine the viability of bus services as they are caught up in traffic creating a vicious cycle of decline. It’s hard to see where any of this is acknowledged, let alone addressed, in either the strategy or the ISA.

The Decarbonisation Challenge (page 27)

Figure 2.2.1 and 2.2.2, which are supposedly showing the reduction in CO2 emissions needed to reach net zero transport and the cumulative CO2 saved depending on how quickly we reach net zero transport, appear to be incorrectly labelled. Firstly, figure 2.2.1 should be a graph showing the levels of CO2 emissions that are allowed to be emitted in any one year to get to net-zero in a timely fashion. They are not reductions as depicted. Figure 2.2.2 should be total cumulative emissions emitted.

Secondly, figure 2.2.1 shows 2018 emissions from transport as being only around 5.3 MtCO₂e which contradicts the Decarbonisation Evidence Base and Strategic Recommendations Report (November 2020) which states:

The largest contributor of carbon dioxide in the region in 2018 was transport (7,667 kt CO₂e/41%), followed by industry and commercial (5,627/30%), domestic (5,040/27%), and agriculture (241.7/2%). Meanwhile, transport in ENSTS makes up approximately 5% of the total transport carbon emissions across the UK (page 27)

By transportation mode, road transport is the largest contributor, which accounts for 96% of the total transport carbon emission in Essex, Norfolk, Suffolk, Thurrock & Southend (ENSTS) (page 28)

We understand that the different emissions are down to using different sources, but it is of concern that there is so much difference and that the lower (inaccurate) total was used in the draft Transport Strategy. This could impact on how seriously people take action on carbon emissions.

Finally, if the graph in figure 2.2.2 (cumulative emissions) was generated from the graph in figure 2.2.1 (annual emissions) then given that figure 2.2.1 understates the annual regional transport emissions, it would suggest that the gradient of figure 2.2.1 is overly optimistic. A much faster (steeper) decline in emissions needs to take place to stay within the region's overall budget.

The Tyndall Centre carbon calculator (see Annex 1) estimates that Transport East as a region only has a 153 MtCO₂ energy only carbon budget remaining from 2018 – 2100 (and only 116.5MtCO₂ from 2020 – 2100). As surface transport accounts for 42% of the region's carbon emissions, assigning a budget in proportion to that means the surface transport budget for the region is $153 \times 0.42 = 64.26$ MtCO₂. That is roughly the same as the cumulative total shown in figure 2.2.2 for net-zero by 2040.

This highlights that any failure to act quickly to reduce emissions is likely to cause the region to exceed its carbon budget. As the region has already failed to reduce its carbon emissions significantly since 2018, the region's transport budget has already shrunk to 48.93 MtCO₂ and that's not counting 2020 or 2021's emissions which have yet to be published. If these

are around 7 MtCO₂ per annum then the remaining transport budget is likely to be around 35 MtCO₂, representing only 5 more years at current rates of consumption.

This is why it is imperative that there is a moratorium on road building and a prioritisation of sustainable transport to maximise modal shift and the reduction in carbon emissions. It is simply not tenable to continue with a business as usual approach to roads.

A Strategy for everyone

We strongly support the focus on delivering equality through the transport system (page 39). Unfortunately, though that focus is lost when prioritising investments and interventions which is not helped by an ISA that fails to properly identify equality issues. Given many people whose choice of transport is affected by their protected characteristic cannot drive or afford a car, investing in sustainable and affordable transport is essential for levelling up and reducing inequality. While the draft strategy rightly wants to improve active travel and public transport, it will not be able to do so to the level needed if it is insisting on building more roads. This will result in more traffic, more pollution (often affecting the poorest the most), more congestion long term and the undermining of public transport (meaning those who don't drive are still left stranded or disadvantaged). It is the antithesis of equitable.

Strategic priorities (pages 9 – 11 and 43 – 88)

Decarbonisation to net-zero

Goal 1 – Zero carbon growth – support but it should be more explicit that new development should only be located when it is directly well served by high quality mass transit, whether existing or planned. Just placing development on the outskirts of a town or city with good rail connections, if the development site is not well connected to the centre by safe and attractive sustainable infrastructure and services, will just lead to more car use, traffic and congestion.

Goal 2 - Reduce demand – support but this should emphasise that the focus should be on people being able to make more local journeys without access to a car. While reducing the mileage driven is important, most of the wider benefits of bringing services closer to people will be lost without a switch out of the car altogether (electric or otherwise).

Equally, while we support the proposed reviewing of planning applications, we would like to see a stronger emphasis on maximising modal shift to active travel and public transport. Otherwise, there is a danger that the focus will be on electric vehicles as being the solution which will create or perpetuate many of the problems we currently face with excessive private car use.

Finally, we disagree with the focus on reducing travel just at 'peak times' as the supporting text suggests. Given a certain amount of flattening of the peaks since Covid, and the need to

reduce traffic overall, the aim should be to reduce the need to travel at all times and certainly by car at all times.

Goal 3 – Shift modes – fully support. While we welcome the establishment of sub-national Active Travel, Bus and Rail groups they will need some form of powers, influence and funding to achieve things and not just become talking shops.

Goal 4 – Switch fuel – support but in the rush to roll out electric charging points, there needs to be care that the walking environment is not further compromised as is currently happening. Pavements have for too long been seen as the easy dumping ground for any highway detritus which has led to a decline in the pedestrian environment. This not only puts people off walking, as it becomes less attractive and convenient, but it can be hazardous too. There needs to be recognition of this within the section and a commitment to keep charging infrastructure off pavements as much as possible.

Connecting growing towns and cities

Goal 5 – Better connections within towns and cities – (for walking, cycling and passenger transport) - fully support. It will be essential that a regional approach to parking is taken so that free parking is avoided. This will help ensure that cars are not subsidised further at the expense of public transport which already has to compete on a very uneven playing field. While we welcome a review of parking, it needs to form a major strand of the strategy as otherwise it is unclear what other demand management measures are envisaged. Without demand management car use will continue to rise regardless of its negative impacts.

Most urban areas are a long way off having half of all journeys being made by active travel by 2030 (Fig 4.3.1, page 50). To free up sufficient road space, as well as reviewing parking costs and provision, there is also a need to tackle private car ownership which blights many streets. Rather than outright bans of private cars, people need to be given access to a car without the need to own one, especially as once they own a car it sits around for 96% of the time taking up valuable space. This will require a greater emphasis on shared transport which, while it is mentioned in the draft strategy, does not feature as strongly as it could, especially given the huge benefits it can realise in terms of freeing up space and reducing car use.

Goal 6 – Better connections between towns and cities – We would certainly support making journeys more reliable, but making roads faster will undermine public transport and increase pollution. The word ‘improving’ can mean different things to different people so when used in reference to roads, there needs to be clarity as to whether this is about expanding road capacity or removing capacity for private vehicles and giving it to public transport or active travel.

The draft strategy recognises problems that roads generate longer term traffic but then appears to immediately forget this when advocating targeted interventions to provide more capacity. This cognitive dissonance needs to be faced up to if the strategy is to succeed.

Increasing road capacity ahead of taking all other measures to reduce traffic through modal shift and reducing the need to travel will undermine these important aspects of the draft transport strategy.

The strategy mentions the £8.2 billion Lower Thames Crossing as providing resilience to the M25 but the reality is that it will generate significant amounts of new traffic north and south of the Thames. It is these sorts of proposals consuming billions of pounds in Government funding that could be better repurposed to better deliver the outcomes being sought by this draft strategy.

Caution also needs to be taken over the promotion of park and ride which research has shown can increase carbon emissions, increase in car mileage and make regular longer distance bus services into and out of urban areas uneconomic. All of these elements would undermine the other strategy objectives. The research¹ summarises the issues here:

*There is partial understanding amongst local authorities about the effectiveness with which P&R addresses the range of objectives in practice. The key travel behavioural findings are that **only a portion of P&R users' car trips are shortened. Hence, overall increases in car use occur, combined with overall reductions in public transport use, and in some cases less active travel.** Where dedicated public transport services are operated, these are also a further source of additional traffic. [our emphasis]*

Goal 7 - Integrated transport networks with customers at the heart – fully support

Energising coastal and rural communities

Goal 8 - Increase access for rural and coastal communities – we support this but are not convinced by the roll out of demand responsive (bus / minibus) services which can be quite expensive and only really make sense operating at the margins. We would like to see far greater ambition in the strategy to establish a Swiss style public transport offer where communities of a certain size are guaranteed set levels of service provision. While this would cost money, covering the region with demand responsive services would be a significant undertaking and would have far fewer and smaller benefits, with only marginal impacts on reducing inequality and improving health and well-being.

Goal 9 – Improving coastal connections– we support this goal but only if it focusses on sustainable connectivity, not more roads. As we have stated previously building roads would divert scarce resources and undermine the economic viability of public transport. Improving public transport and active travel connectivity needs to be prioritised above new roads in order to achieve modal shift, reduce inequality, strengthen the economy and improve people's health and well-being.

¹ [The Effectiveness of Park & Ride as a Policy Measure for more Sustainable Mobility](#) – (Professor) Graham Parkhurst and Stuart Meek, University of the West of England, 2014

Unlocking international gateways – Ports

Goal 10 – Improving capacity, journey time and reliability – strongly against more road capacity as it will divert resources from alternative and more sustainable solutions. Road reliability should be achieved through modal shift and traffic reduction.

Goal 11 – Alternative fuel for freight vehicles and port operations – support.

Goal 12 – Moving passengers, employees and freight to sustainable modes – strongly support – this needs to be the priority before thinking about road investment.

Unlocking international gateways – Airports

Goal 13 – Better connections to airports – support the focus on sustainable transport but do not agree about tackling road pinch points (although the text is half lost within the strategy on page 84) other than to create bus priority measures. Otherwise driving to an airport will become easier and the bus or train will be made less attractive in comparison. There is no mention in this section of the need to create longer distance, high quality cycle superhighways or tracks to enable workers, especially those within 10 miles of the airport, to have safe and cheap access. Research from Denmark has seen the average distance on one superhighway into Copenhagen being over 9 miles.

Goal 14 – Net zero airports – this is a laudable ambition, but very far from reality at present. What is worth noting though is that if aviation doesn't reduce emissions as fast as hoped for, this will increase pressure on surface transport to go further and faster.

Goal 15 – Sustainable airport journeys – fully support – combined with new cycle infrastructure for workers, schemes that promote e-bikes would help increase modal shift for those living closer to the airport.

Investment and delivery plan

The delivery plan contains an assessment of the projects in appendix B which seems to be lacking any rigour and appears rather generalised. Many road schemes are likely to actively undermine public transport and active travel by making car travel easier yet this and other negative impacts that arise from road building and undermine strategic objectives do not register in the assessment. Only carbon scores are given as negative and then only as a minor impact and for some roads they are even described as neutral. None of this seems remotely credible.

Given the urgency around the need to tackle the climate emergency, building new roads, particularly over the next 15 years, makes no sense at all. Yet it's not entirely clear within this delivery plan how sustainable transport projects can be fast-tracked to address this and many other pressing issues. Many of the programmes seem very long term in nature and not suited to rapid deployment which is what needs to happen. Certainly, we wouldn't want to

wait for up to 5 years just to go through an ideas phase for these sorts of projects or the current situation is just going to get worse.

Draft Transport Strategy Conclusion

While the draft transport strategy contains some very good ideas and ambitions, many of which we strongly support, it very much sounds like motherhood and apple pie. It has something that will please everyone and offend no one, but that is its fundamental problem. It is fooling people into believing that you can have your cake and eat it. That you can carry on building new roads, increasing road capacity and yet create an economically viable public transport service and achieve significant modal shift.

It's this failure to acknowledge the contradiction at the heart of it that lets it down. Even in the unlikely event that all the active and public transport proposals are funded and delivered quickly, with new roads coming forward and consuming much of the local transport budgets, the viability of public transport will be undermined. Therefore, it will not deliver on the region's strategic priorities and carbon emissions will not fall quickly enough while there won't be a significant modal shift to active and public transport.

This ironic thing is that a greater focus on active and public transport with some demand management measures would deliver most of the strategy's ambitions and be cheaper overall. The survey on page 21, Table 1.4.1, gives some promising indications about how people will travel in the future. But the chance of fixing changing habits and reduced car use will not happen with this strategy increasing road space for private vehicles as it becomes easier and cheaper to drive.

Overall, we feel that this draft strategy marks a good first stage in the process of delivering a transport strategy for the region but it needs to be paused and revisited to remove the contradictions at the heart of it. Only then will it be able to deliver on the many bold ambitions within it.

Integrated Sustainability Appraisal

We are disappointed that the ISA, while long and detailed, contains much information and assertions that are questionable at best alongside serious omissions elsewhere. In this part of our submission we will not illustrate everything that is wrong but through a significant number of examples, highlight how deficient it is.

Key plans, policies and strategies

Table 3.1 on page 26 fails to include either Bus Back Better or Gear Change under Equality and Diversity and Health, while they are very relevant to and could impact upon Air Quality, Noise and Vibration and Climatic factors although the latter might be covered by Transport Decarbonisation Plan (TDP).

The inclusion of RIS2 under health, something we asked about previously, needs to be seen in the context of all the health issues it creates. It increases air and noise pollution overall, increases traffic through building new roads and encourages a sedentary lifestyle which has further negative health impacts. The traffic it generates also further disincentivises people walking, cycling and using public transport.

While RIS2 obviously has a role to play in road safety, overall, it can tend to reduce road safety on the surrounding road network through increasing traffic. In particular it can make roads less safe for active travel, which makes it surprising that Gear Change is not listed here either, when much of its focus is about creating safer infrastructure for cycling.

Scoping

We welcome the fact that some of the suggestions we made about the scoping report have been incorporated and taken on board (pages 30 – 36). Unfortunately though, our comments on equality impact assessments were missed and not reported. The unfounded inferences and assertions around equalities we have seen made in other ISAs have been repeated here and undermine the draft strategy by failing to give fully considered feedback. For example, the negative impact of road building on public transport is completely ignored.

There still seems to be a glossing over of the critical importance of needing to stay within a carbon budget. The strategy sets out three pathways but there is no rationale why one of them is better than the other or indeed any of them are sufficient to keep the UK or the region on track to reducing emissions quickly enough. As we have already mentioned in our comments on the draft strategy, without a budget and a pathway to follow, there is no way of assessing how well the region is performing in reducing carbon emissions quickly enough. This is something the ISA should have been really clear about if it is to fulfil its intended purpose and statutory requirement.

Specific comments

Figure 5.5 health inequalities, page 51 – wording missing from several boxes.

Table 5.14, page 54 – Air and noise pollution – does not mention new WHO air pollution guidelines for PM2.5s and NO2. These are much tighter than any legal limits but give a far better indication of harm from air pollution as well as establishing that there are no safe levels for these two pollutants.

Page 55 talks of collisions under health but accidents under community safety – this is inconsistent.

Page 58 – biodiversity – no mention of road kill and habitat severance both of which are significant issues.

Page 61 – air quality – no mention of new WHO guidelines for PM2.5s and NO2.

Pages 63-65 – climate – There are several omissions under this heading starting with the fact that there is no mention of the UK’s Nationally Determined Contribution to cut carbon emissions by 68% from 1990 levels by 2030. This is important as it comes ahead of the 6th carbon budget, which is the only budget that is in line with reaching the 2050 net-zero target. Therefore, it is far more challenging than meeting the 5th carbon budget which was set under the old 80% by 2050 target.

Also missing is reference to the joint recommendations in the Climate Change Committee’s 2021 Progress Report to Parliament, which recommended that

Decisions on investment in roads should be contingent on analysis justifying how they contribute to the UK’s pathway to Net Zero. This analysis should demonstrate that the proposals would not lead to increases in overall emissions.

Additionally, it is worth noting that Lord Deben, Chair of the Climate Change Committee, and erstwhile Transport East resident, stated after the publication of the TDP that: *“the Government must be congratulated on its targets and attacked on the basis it has not delivered on the mechanisms for delivering those targets.”* At the same time he also said: *“We’ve also got to ask ourselves a very big question about the road building programme. There’s a very great deal of money there that should be used in other ways.”*²

All of these strengthen the case for a moratorium on road building and resetting the strategy but without their inclusion in the ISA there has been little or no challenge around road building.

Assessing performance against ISA objectives

Table 6.1 Pages 84-86 – Questions to consider in assessing performance against ISA objectives.

Population and socio-economics

There is no consideration as to whether proposals (such as new roads) might undermine the economic viability of public transport, existing or planned.

Equality and Diversity

² From the Greener Transport Solutions webinar: Not the journey but the destination: how our whole economy needs to change – 8th September 2021

There is no mention of active travel yet it is the cheapest travel available, unless it is supposed to be covered by physical access. However, given its importance in terms of affordability and improving health outcomes it deserves specific mention.

Health

What does improve opportunities and access for active travel mean? The wording is woolly and a better test the ISA should be applying is: makes active travel, safer, more convenient and more attractive.

This section also has 'reduce congestion' as a key consideration but congestion has little impact on health compared to the number of sedentary lifestyles caused by car dependence which receives no mention whatsoever. Another critical health impact is linked to carbon emissions and climate change: As the environment becomes more stressed, more extremes of weather, particularly heatwaves will put more people's health at risk as will the increased severity of storms and higher sea levels. This is particularly pertinent for a low-lying area such as the eastern region.

This section also mentions improving access to green space but without qualification. Often motor vehicular access is already well catered for with places overrun by cars mostly because sustainable transport provision is so poor. This section should focus on improving sustainable access.

Community Safety

This would also be the place to advocate for a Vision Zero approach, to really focus on cutting road traffic collisions particularly those that involve pedestrians and cyclists, but also including horse riders and motorcyclists.

The current wording for this section is rather strange saying: *Improve road user safety and reduce risk of collisions and road danger including for active travel*

This makes it seem that active travel is an afterthought. Surely it would be included in any road safety measures but if emphasis is wanted it should say 'especially', not 'including'.

Climatic Factors

This section is particularly poor in that construction emissions seem to be considered to be contributing to reducing carbon emissions even when they increase them. While it is important to reduce construction emissions, they are nevertheless not zero in magnitude. Additionally, they happen at the beginning of a project, adding to emissions totals at the very time we need to see drastic reductions. Any construction will therefore negatively impact on carbon emissions. This needs to be reflected here, not glossed over.

Schemes should be assessed on their ability to reduce emissions overall such as active travel and public transport and not just contribute to reducing carbon emissions which sounds like a fudge. A second point worth mentioning here is that the wider impact on carbon emissions should also be considered. While it might be claimed that the ISA is not the place to consider life time carbon emissions, it should consider if the draft strategy is increasing car use. In the absence of any credible and significant demand management measures, then it will increase traffic and contribute to an increase in manufacturing emissions for new cars and EVs.

Finally, no mention is made of the risk of 2 degree and 4 degree climate change and the impact that that might have on the region. These are very real risks given the lack of progress on reducing emissions to date which could severely disrupt the economic trajectories and assumptions made about future demand.

Assessment of strategy alternatives (page 94)

Alternative Fuels

Some of this is just plain wrong. EVs are not expensive to run. Indeed, one of the problems with them is that they are incredibly cheap to run and therefore undermine public transport. People can also see them as 'guilt free' motoring and use them more than before, resulting in more traffic and congestion. With so many fossil-fuelled cars still on the road, this will lead to more pollution.

Therefore, this whole element of analysis by the ISA needs revisiting. Certainly, purchasing an EV is very expensive, but is making them accessible to lower income households really desirable if that would swamp the roads with even more cars, causing gridlock? Surely the aim should be to reduce private ownership overall as suggested recently by the Transport Minister, by promoting shared transport for when people need a car and encouraging much greater use of active travel and public transport for all other journeys. Making car purchase and use cheaper could be disastrous for both people and the planet with adverse health and equality outcomes as well as requiring further significant public subsidy.

There is also a very real danger, already being seen from central Government of a complacency around the need to take action on emissions, because of a misplaced faith in EVs cutting all emissions quickly enough. Research shows that they won't^{3,4,5}. The alternative fuels scenario could extend or increase carbon emissions in the short to medium term as it undermines efforts to encourage active travel and public transport. This would then have an impact on equalities, not flagged up here either.

³ [The role of energy demand reduction in achieving net-zero in the UK](#) – Centre for Research into Energy Demand Solutions (CREDS), October 2021

⁴ [Not going the extra mile: driving less to tackle climate change](#) – Green Alliance, December 2021

⁵ [More than electric cars](#), Transport for Quality of Life, 2018

Modal shift

We fail to see how modal shift could possibly impact negatively on equality issues. In fact, encouraging modal shift would likely speed up compliance and adaptation as operators would be better able to afford to make the necessary changes to accommodate more disabilities. Higher standards would also be expected or required of them in providing new and better services. Similarly, the focus on modal shift would see public transport receiving renewed focus and interest by public bodies which could also hasten improvements. Therefore, this would most likely have a positive outcome.

Even if not all disabled people can use buses, modal shift is not stopping them travelling by car. Indeed, if modal shift policies are successful, then travel by car will become easier for those that need to use one. Therefore, we fail to see the justification for the conclusions in table 7.2 that apply a negative score to modal shift.

We should not forget that many disabled people do not have access to a car and many already rely on public transport and active travel to get around. Increasing modal shift through improvements to sustainable transport would be hugely beneficial to these people.

Also, under modal shift, it's stated that journey distances may be too great for active travel, limiting the scope of connectivity improvements that could be achieved. Yes, this may be true but equally, with e-bikes and good infrastructure, distances up to 10 miles are quite commonly ridden, while you might also expect to have some public transport over that sort of distance. So again, it is unclear how this is a negative impact. Some people may not be able to shift their journeys, but that is not always the case, and that is quite different to them being disadvantaged by the measure, especially if roads become clearer and they can travel by car more easily.

However, it is worth stating that unless there is some demand management the region is unlikely to see modal shift of any significance on its own or in combined approach. But again, that is no different to the current situation.

Table 7.2 Assessment of transport approaches against ISA objectives (page 95)

We disagree with ISA assessments on alternative approaches. The ISA states that the focus on alternative fuels would have neutral impact on landscape and heritage and soils, yet without demand management or modal shift this will lead to an increase in traffic with consequential negative impact on these and other features. Plus it will add to pressure for more road building exacerbating these pressures.

Also, climate is considered positive and longer term it will be but short to medium term this approach could have negative consequences as traffic rises and while the majority of motor vehicles on the road are still powered by the internal combustion engine.

As regards equalities for alternative fuels we would expect that to be negative. The focus on cars would potentially further undermine active travel and public transport measures which are already under pressure to cut back on services. This would leave a significant proportion of the population without access to safe, convenient and affordable transport.

We would also question other aspects of the assessment, such as promoting active travel would increase collisions and put more people in danger. There may be a short term blip if some shift occurred on the back of a few improvements but before other safety issues could be addressed. However, generally this is completely unfounded as significant modal shift would not be possible without improving the safety and attractiveness of active travel infrastructure overall. Thirty years of exhorting people to walk and cycle and with the provision of mostly poor quality infrastructure, has completely failed to achieve much change. A far more likely outcome would be that significant modal shift would lead to a significant reduction in incident rates over time as has been seen in The Netherlands.

Overall, the assessment of the three scenarios doesn't seem that robust, reinforced by the fact that they appear virtually identical.

Assessment of Transport Strategy wider outcomes (page 97)

We fail to see the purpose of this assessment in table 7.3 and its relevance as these 'motherhood and apple pie' statements should always score positive. What is more important is the assessment of the draft strategy's goals and what lies behind them to determine the true impact of the draft strategy.

General ISA mitigation measures for the Transport Strategy (page 100)

As we have already intimated the ISA is not fit for purpose in highlighting potential issues and conflicts arising from and within the draft strategy. It grandly states in table 7.4 that carbon emissions will be in line with carbon reduction targets but there is no evidence that this is the case, especially without a carbon budget or pathway to adhere to.

In fact, it fails to address the contradiction at the heart of the strategy that you can carry on building new roads and reduce carbon emissions quickly enough and while achieving significant modal shift. No mention is made of the need for significant demand management measures to achieve this or indeed what these might be, short of some parking restraints.

Transport Strategy strategic priority assessment (pages 101 – 116)

Table 7.5: Decarbonisation pathway (pages 102 – 105)

Goals 1 and 3

While some people may be unable to or less comfortable with using active travel and public transport, this should not result in a neutral score under equalities. While addressing their concerns, such as by making women feel safer on public transport, will bring more benefits, achieving modal shift without any specific work on safety would not stop people from driving. They will not be disadvantaged and if there is less traffic on the roads, they could actually benefit.

Equally and more importantly it must be stressed, as this error keeps creeping in (and was something we warned about in our response to the scoping report), not all disabled people drive. In fact, many don't and many already use and are reliant upon active travel and public transport. Encouraging modal shift through better infrastructure and services will be hugely beneficial to them and others who currently find these restrictive. Therefore, the impact on equalities is likely to be positive overall.

While we agree that people with disabilities or other concerns need to be accommodated in provision for active travel and public transport, the concern with the current wording is that it implies all people with disabilities have issues using these modes, when they don't. Equally that they are somehow ok at present and that this measure might take something away from them, when it won't; it will most likely add to their choice and freedom. The underlying unspoken assumption would appear to suggest that private car use isn't a problem and doesn't impact on people with disabilities and other issues when it clearly does.

One mitigation measure would be for adequate blue badge parking. Another would be to provide better public transport services for shift workers with taxis paid for if public transport services are no longer running. Therefore, we don't believe these issues are insurmountable but care does need to be taken that demand management measures are not undermined by making too many exceptions. A preferred route would be to address how modal shift can be made to work better for more people. That would greatly improve equalities.

Overall, these goals seem underscored for their positive impacts on a range of issues.

Goal 4

No recognition of impact of charging infrastructure on walking and wheeling and impact on vulnerable people from trips, etc.

Table 7.6: Connecting growing towns and cities pathway (pages 107 – 109)

Goal 5

The goal specific ISA recommendations make it sound as though people with disabilities are not accommodated in active travel and public transport, when this is a requirement already, although many local authorities seem to ignore this when it comes to barriers across active travel infrastructure or poor surfacing.

More importantly no mention is made of how much of this can be delivered without demand management which could be critical in releasing road space for reallocation. Linked to this is the promotion of shared ownership / mobility as a service providing people access to different transport modes, including cars, without the need for ownership and the storage issues that creates.

Goal 6

This will undermine goal 5 if it involves building more roads which will increase traffic coming into and out of urban areas. It's really not clear how the ISA deals with this contradiction and its suggestion to *Include emphasis on sustainable future use of roads in the region* is meaningless.

Goal 7

The way that the ISA recommendations are written suggest that pedestrians and cyclists are not vulnerable groups. They are certainly most at risk on the highway.

Table 7.7: Energising rural and coastal communities (pages 111 – 112)

Goal 8

Increasing accessibility is best served by prioritising investment in active travel and public transport, especially for the most disadvantaged, many of whom will not have access to a car. This last point needs emphasising. Related to this the ISA recommendations about including targets for travel to healthcare facilities should also include educational facilities which are also a major source of car trips and inequality.

It's not clear why EV infrastructure is included here as it makes no difference to accessibility.

Table 7.8: Unlocking international gateways (Ports) (pages 114 – 116)

Goal 10

We cannot see how the impacts of road building and more traffic can possibly not be outright negative for most aspects.

Cumulative Effects (pages 121 – 125)

Table 7.10: Intra-plan and inter-plan cumulative effects with Transport Strategy (pages 121 -124)

Why is Gear Change not listed under population or indeed other areas? It improves access to opportunities for those without a car (often young and or poor), reduces pollution and improves health and safety.

Health – while RIS2 could play a role in improving air pollution if it focussed resources on demand management measures and tackling pollution hotspots on the network, ‘improving’ the SRN which usually means increasing capacity will not improve health. In fact, it will undermine health outcomes by increasing traffic, congestion and pollution over a wider area and increase car dependency, creating more sedentary lifestyles.

Safety – no consideration that RIS2 will increase traffic and overall negatively impact on active travel, especially in the absence of demand management measures. While some schemes can improve road safety, these interventions are often predicated on significant capacity increases, rather than addressing the road safety issue specifically. This will lead to increasing traffic on the surrounding road network which will undermine active travel and public transport with consequential negative impacts on both health and safety.

Climate – none of these plans listed, including the draft strategy, show how they will reduce emissions quickly enough and within their carbon budgets. There are no budgets allocated, no pathways for carbon reduction and therefore no way of properly assessing outcomes. Therefore, how it can be claimed that the overall impact over the lifetime of the project is anticipated to be positive is pure conjecture. Only England’s Economic Heartland has a traffic reduction target. All other areas will see increasing traffic which will encourage more traffic and emissions within the Transport East region.

While there is an acknowledgment that road building could undermine other objectives under goals 10 and 13, for some reason this doesn’t extend to goal 6 which has similar ambitions.

Cumulative effects mitigation recommendations (pages 124 – 125)

This should place closer scrutiny on the wider reaching impacts of road building and traffic generation as there is a real danger that this will undermine modal shift and the need to reduce carbon emissions quickly enough. There are many wider carbon emissions linked with road building that are not properly assessed.

Linked to this, we do not agree with the Sustainability Action Plan proposals for a 3 – 5 year monitoring of carbon emissions. Given we are in a climate emergency, we need annual

monitoring of emissions, because waiting for 3 – 5 years before assessing progress would be far too late. The next 8 years up to 2030 are critical for fast and effective action. Reviewing progress in 2025, let alone 2027 would be far too late to make adjustments and change tack, especially as we may have only 5 years of budget left at current emissions rates.

Assessment of the Draft IDP Approach (pages 127 – 146)

We don't see how Norwich Western Link Road (corridor B) is only assessed as moderate negative given the importance of bat colonies and woodland. Also, what the rationale is for why it is being fast-tracked, especially as it is not supported by Norwich City Council.

Assessments in this section are pure conjecture given road building and the low cost of road transport will undermine the viability of public transport and modal shift. This is already happening with existing motor vehicles, and with EVs this situation will worsen. If modal shift can be successfully implemented it would remove the need for most, if not all, road schemes.

Another concern with this section is that where adverse impacts are discussed, none mention climate change, health, air or noise pollution, etc. Indeed, claimed benefits on reducing congestion and air and noise benefits are not guaranteed but are taken as so. Yet road building will increase traffic overall leading to more congestion and pollution.

Tables 8.2 – 8.8 Summary of assessment of IDP interventions (pages 131 -137)

This table contains pre and post assessments but it is not clear what these relate to. For example, Norwich Western Link has very positive health outcomes both pre and post, yet we cannot see how such a score is achieved given it will lead to greater car dependency and would likely undermine active travel. Also, equality is assessed as being neutral – positive, yet more car dependency is not improving equality. It is the opposite. Meanwhile climate is labelled as neutral, despite the emissions associated with new road building both in construction and operation.

Without greater openness as to what many of the transport 'packages' contain, it is difficult to comment on the accuracy of the assessments. So called sustainable transport packages can often contain significant road capacity increases which if properly accounted for would probably change the assessment of the proposal.

Equally, some of the positive scores for sustainable transport will only be achieved with demand management. This needs greater acknowledgement as otherwise it is perpetuating the lie that everyone can have improvements and pollution will be reduced without any difficult decisions having to be made.

Mitigation recommendations (pages 138 – 139)

Equalities – should include condition for no road capacity expansion except for public transport as otherwise this will increase car use and traffic and emissions while undermining active travel and public transport which many people rely on who don't have access to a car.

Health – the wording here is mealy mouthed. If new roads are built they should include segregated provision for active travel, not 'should aim to include' which is all too easy to ignore.

Additionally, road capacity expansion should be avoided to reduce traffic, reduce car dependency and sedentary lifestyle and the undermining of public transport. Not a mention is made of this here or under equalities.

Safety – this section talks about active travel measures needing to consider safety which seems rather superfluous when they will anyway. Why these are mentioned as opposed to road safety generally is not understood and in any case a Vision Zero approach as is being suggested would address this. This isn't mentioned either.

Climate – this section is one of the worst for ignoring the biggest issue associated with this strategy which is the focus on road building. There is no mention of road building driving up traffic and emissions, undermining public transport, health and equality outcomes. Table 7.4 which listed prior mitigation on climate is woefully vague and optimistic.

Cumulative effects (pages 139 – 143)

We find the assessment of cumulative effects to be unconvincing, even if there is some acknowledgement of road building impacts. However, in table 8.11 it is unclear why only the A47 North Tuddenham to Easton is considered to have an interaction identified and A47-A11 Thickethorn Junction and A47 Blofield to North Burlingham are not? Given they are on the same road and will increase capacity it seems unlikely there would be no interaction.

Claimed cumulative benefits on air quality are not credible when assigned to new roads as congestion benefits are likely to be short lived and counteracted in any case by a rise in congestion elsewhere. Long term air quality improvements will arise from a change of fuels and are not dependent on road building.

Monitoring Plans (pages 147 – 159)

Table 9.2 Draft monitoring plan (page 150 - 159)

Equalities

We really struggle to understand why accessible and affordable access to EVs for low income families is a priority for monitoring (E2). Accessibility is not defined by having an EV or not (other cars are still available and will be for many years) and making EVs more affordable will fuel car use. This will further undermine public transport services worsening the situation for those who still cannot afford a car or who cannot drive for some other reason such as a visual impairment. A far better measure of inclusivity would be to monitor the extent and timings of bus services and the areas still considered to be transport deserts.

Safety

This indicator (S3) should focus on rates of incidents or collisions, not on totals. Totals can mask wider issues and give misleading impressions. For example, the total number of injuries from cycling could rise with increased levels of activity which might appear bad. However, if that is accompanied by a big increase in trips and mileage then the injury rate is likely to have fallen which is a positive development. Sticking with monitoring total numbers could create a perverse incentive to design out walking and cycling to keep numbers low (as historically has been the case), rather than encouraging more walking and cycling and actually focussing on reducing the danger.

Air quality

We are disappointed to see that the new WHO guidelines levels for PM2.5s and Nitrogen Dioxide are not being used to assess air quality in the region. This would provide a better idea of the changes required and whether transport needed to play a bigger role in addressing air pollution in particular locations.

Climate

We are assuming that C1 should say 2040, not 2050 and that this is an error. However, our main concern with this section is the suggestion that it is sufficient to report on this every 3 – 5 years. That is far too long in a climate emergency when we have already highlighted that the region may only have another 5 years of carbon budget left at current annual emission rates. Monitoring needs to be done annually and mechanisms in place to address issues quickly. This seems wholly absent at present.

C4 is monitoring the increase in public transport patronage is welcome but without an assessment of overall trip numbers and those that are driven, there isn't any way of assessing whether the region is achieving a shift in modal split.

None of the assessment of schemes or the strategy includes vehicle lifecycle analysis which will be quite significant for a strategy based on electrification and maintaining or growing vehicle numbers. This is an important element of carbon emissions that is currently being ignored. If a transport system is based largely on private motorised transport, then part of its impact should include the pollution created, and resources used, to manufacture that vehicle. That pollution should then be added to any user emissions to get a more realistic and accurate assessment of the true carbon and other pollution impacts from using a private vehicle.

If this was done properly it would reinforce the benefits of using public transport which generally has a greater resource efficiency as vehicles are used for long periods every day, most days of the week and for a longer lifetime compared to a private car, which spends most of its time stationary and unused.

ISA and monitoring conclusion

Despite containing a lot of information and detail in places, the ISA fails to provide the level of scrutiny and challenge required to inform decision makers about the impacts of the proposals in the draft Transport Strategy. This is a serious failure and raises the question as to whether the assessment is legally compliant with Environmental Impact Regulations. Consequently, there is an urgent need to reappraise the strategy and address the serious contradictions within it.

This failure is carried over into the monitoring where it is suggested that reporting on carbon emissions will be done on a 3 – 5 year cycle. This is clearly inadequate in a climate emergency and when there may be only 5 years of carbon budget left. Only annual reporting with clear mechanisms in place to deal with the strategy going off track will suffice but nothing is discussed let alone provided for.

Overall, this is a very disappointing piece of work and needs to be thoroughly revisited to address the many omissions, inconsistencies and unfounded assertions.

Annex 1

Setting Climate Commitments for Transport East

Quantifying the implications of the United Nations Paris Agreement for Transport East

Transport East consists of the following local authorities: Babergh, Basildon, Braintree, Breckland, Brentwood, Broadland, Castle Point, Chelmsford, Colchester, Epping Forest, Fenland, Forest Heath, Great Yarmouth, Harlow, Ipswich, King's Lynn and West Norfolk, Maldon, Mid Suffolk, North Norfolk, Norwich, Rochford, South Norfolk, Southend-on-Sea, St Edmundsbury, Suffolk Coastal, Tendring, Thurrock, Uttlesford, Waveney

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NB: All views contained in this report are solely attributable to the authors and do not necessarily reflect those of the researchers within the wider Tyndall Centre.

Key Messages

This report presents climate change targets for Transport Eastⁱ that are derived from the commitments enshrined in the Paris Agreement [1], informed by the latest science on climate change [2] and defined in terms of science based carbon setting [3]. The report provides Transport East with budgets for carbon dioxide (CO₂) emissions and from the energy system for 2020 to 2100.

The carbon budgets in this report are based on translating the “well below 2°C and pursuing 1.5°C” global temperature target and equity principles in the United Nations Paris Agreement to a national UK carbon budget [1]ⁱⁱ. The UK budget is then split between sub-national areas using different allocation regimes [4]. Aviation and shipping emissions remain within the national UK carbon budget and are not scaled down to sub-national budgets. Land Use, Land Use Change and Forestry (LULUCF) and non-CO₂ emissions are considered separately to the energy CO₂ budget in this report.

Based on our analysis, for Transport East to make its ‘fair’ contribution towards the Paris Climate Change Agreement, the following recommendations should be adopted:

1. Stay within a maximum cumulative carbon dioxide emissions budget of 116.5 million tonnes (MtCO₂) for the period of 2020 to 2100. At 2017 CO₂ emission levelsⁱⁱⁱ, Transport East would use this entire budget within 7 years from 2020.

2. Initiate an immediate programme of CO₂ mitigation to deliver cuts in emissions averaging a minimum of -13.4% per year to deliver a Paris aligned carbon budget. These annual reductions in emissions require national and local action, and could be part of a wider collaboration with other local authorities.
3. Reach zero or near zero carbon no later than 2041. This report provides an indicative CO₂ reduction pathway that stays within the recommended maximum carbon budget of 116.5 MtCO₂. At 2041 5% of the budget remains. This represents very low levels of residual CO₂ emissions by this time, or the Authority may opt to forgo these residual emissions and cut emissions to zero at this point. Earlier years for reaching zero CO₂ emissions are also within the recommended budget, provided that interim budgets with lower cumulative CO₂ emissions are also adopted.

1. Introduction

This report presents advisory climate change targets for Transport East to make its fair contribution to meeting the objectives of the United Nations Paris Agreement on Climate Change. The latest scientific consensus on climate change in the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5°C [2] is used as the starting point for setting sub-national carbon budgets [3, 4] that quantify the maximum carbon dioxide (CO₂) associated with energy use in Transport East that can be emitted to meet this commitment. This report translates this commitment into;

1. a long-term carbon budget for Transport East;
2. a sequence of recommended five-year carbon budgets;
3. a date of 'near zero'/zero carbon for the area.

The United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement commits the global community to take action to “hold the increase in global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C” [1]. Cumulative emissions of CO₂ from human activity are the principle driver of long-term global warming^{iv}. It is the relationship between CO₂ and global temperatures which means that staying within a given temperature threshold requires that only a certain total quantity of CO₂ is released to the atmosphere. This is the global carbon budget.

In addition to setting global average temperature targets, the UNFCCC process also includes foundational principles of common but differentiated responsibility [1]. This informs the fair (equitable) distribution of global emissions between nations at different stages of economic development. Industrialised nations are expected to show leadership towards a low carbon future, while it is acknowledged that a greater total share of future emissions will be

associated with other countries as they develop (though their emissions per capita will remain low). Any sub-division of the global carbon budget must therefore account for the development needs of what the Paris Agreement refers to as “developing country Parties” in setting a fair/equitable national or sub-national carbon budget.

The carbon budgets presented here apply to CO₂ emissions from the energy system only. Although all greenhouse gas (GHG) emissions, such as methane and other forcing agents, such as aircraft contrails, affect the rate of climate change, long term warming is mainly driven by CO₂ emissions [5]. Furthermore the physical or chemical properties of each GHG vary, with different life-times causing warming in different ways, and with subsequent, and often large, uncertainties in their accounting [6]. As such the global carbon budgets in the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5°C (SR1.5) [2], relate to CO₂-only emissions. In this report we have discussed non-CO₂ emissions and CO₂ emissions associated with land use, land use change and forestry separately.

Ultimately staying within a global temperature threshold (e.g. “well below 2°C”) requires limiting cumulative CO₂ emissions over the coming decades. Carbon budgets can be an effective way to understand the amount of CO₂ emissions that can be released into the atmosphere in order to do this. End point targets such as ‘net zero’ by 2050, with very clear assumptions, can be useful indicators of ambition, but it is ultimately the cumulative CO₂ released on the way to that target that is of primary significance to achieving climate change goals. Whereas end point focused targets can be met with varying levels of CO₂ emissions (and therefore varying global temperature with consequent climate impacts) depending on their reduction pathways, carbon budgets specify the limits to CO₂ emissions within the period of the commitment. This is a reason why the UK Climate Change Act has legislated 5-year carbon budget periods, as well as a long term target, to keep CO₂ emissions consistent with the framing goal of the climate change commitment. It is also the reason why we recommend a carbon budget based approach.

1.2 Wider UK Policy Context

The UK Climate Change Act now legislates for a commitment to net zero greenhouse gas emissions by 2050⁴, with five yearly carbon budgets to set actions and review progress [7]. The carbon budgets for this target were not available at the time of our analysis for direct comparison, however the recommended budget in this report will most likely be more stringent. This is primarily due to two key differences between our approach and the current recommendations of the UK Government's advisory body the Committee on Climate Change (CCC) that inform the revised UK net zero target:

1. The equity principles of the Paris Agreement and wider UNFCCC process are explicitly and quantitatively applied. Our approach allocates a smaller share of the global carbon budget to the ‘developed country Parties’, such as the UK, relative to ‘developing country Parties’. Moreover the approach is also distinct in including

global 'overheads' for land use, land use change and forests (LULUCF) and cement process emissions related to development.

2. Carbon dioxide removals via negative emissions technologies (NETs) and carbon offsets^{vi} are not included. The UK Climate Change Act's 'net zero' framing means that the commitment is met when greenhouse gas emissions (debits) and removals (credits) from the UK's carbon 'account' balance at zero. Hence the 2050 target can be met using carbon dioxide removal technologies, including land use sequestrations, and potentially carbon offsetting. The CCC include a significant role for NETs such as bioenergy carbon capture and storage and direct air capture in their analysis supporting the net zero target. Doing so theoretically increases the size of a carbon budget, but increases the risk of failing to deliver on the Paris global temperature target. The UK Government has also rejected the CCC's advice to explicitly exclude international carbon offsetting as an approach to meeting the net zero target. Allowing for future carbon dioxide removal technologies and international carbon offsetting ostensibly increase the size of the UK's carbon budget. However carbon removal technologies are at a very early stage of development and whether they can be successfully deployed at sufficient scale is highly uncertain. While they are an important technology to develop, it is a major risk to prematurely adopt a carbon budget that allows for additional CO₂ on the basis that future generations will be in a position to deploy planetary-scale NETs. Similarly, as the CCC note in their advice, the efficacy of carbon offsetting as a contribution to meeting global climate change commitments is not robust enough to incorporate into recommended carbon budgets.

We regard our UK carbon budget to be at the upper end of the range that is aligned with the Paris Agreement's objectives. Early results from the latest Earth system models suggest that the climate may be more sensitive to greenhouse gases than previously thought implying a smaller global carbon budget is required [8]. In addition, assuming that developing countries will, on aggregate, implement rapid emissions reduction measures in line with a 2025 peak year is far from certain. Therefore, we recommend that these budgets are taken as reflective of the minimum commitment required to deliver on the Paris Agreement.

2. Method

The Setting City Area Targets and Trajectories for Emissions Reduction (SCATTER) project [4] funded by the Department for Business Energy and Industrial Strategy (BEIS) developed a methodology for Local Authorities to set carbon emissions targets that are consistent with United Nations Paris Climate Agreement. This report uses the SCATTER methodology with revised global carbon budgets, based on the latest IPCC Special Report on 1.5°C and updated CO₂ emissions datasets, to downscale global carbon budgets to Transport East. This methodology has been successfully piloted with Greater Manchester Combined

Authority and is being made available nationally to support all local authorities and groupings of local authorities.

Step 1: A global carbon budget of 900 GtCO₂ is taken from the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5°C [2]. This global carbon budget represents the latest IPCC estimate of the quantity of CO₂ that can be emitted and still be consistent with keeping global temperatures well below 2°C with an outside chance of stabilising at 1.5 °C. This budget assumes no reliance on carbon removal technologies.

Step 2: A ‘global overhead’ deduction is made for process emissions arising from cement production (60 GtCO₂) [9]^{vii}. Cement is assumed to be a necessity for development [5]. We also assume that there is no net deforestation at a global level (2020 to 2100) so none of the global carbon budget is allocated to this sector. This will require a significant global effort to rapidly reduce deforestation and significantly improve forestry management as well as increase rates of reforestation and potentially afforestation.

Step 3: A share of the global carbon budget is allocated to “developing country parties” assuming a trajectory for those countries from current emissions to a peak in 2025 then increasing mitigation towards zero emissions by around 2050. The remaining budget is allocated to “developed country parties” which includes the UK [10]. This approach of considering developing countries first, is guided by the stipulation of equity within the Paris Agreement (and its earlier forebears, from Kyoto onwards)[10].

Step 4: The UK is apportioned a share of the ‘developed country Parties’ budget after Step 3 to provide a UK national carbon budget. The apportionment is made according to “grandfathering”^{viii} of emissions for the most recent period up to the Paris Agreement (2011 to 2016).

Step 5: Aviation and shipping emissions are deducted. Assumptions and estimates are made about the level of future emissions from aviation, shipping and military transport for the UK. These emissions are then deducted from the national budgets as a ‘national overhead’ to derive final UK energy only carbon budgets. Emissions from aviation including military aircraft are assumed to be static out to 2030, followed by a linear reduction to complete decarbonisation by 2075. The total CO₂ emissions of this path are >25% lower than Department for Transport central forecast followed by reduction to zero by 2075. Shipping emissions are based on Walsh et al [11] ‘big world’ scenario out to 2050 followed by full decarbonisation from this sector by 2075. These aviation and shipping emissions (1,518 MtCO₂) are then deducted as a ‘national overhead’ from the UK budget to derive the final carbon budgets for the UK, from which local authority budgets are subsequently derived [4]. The budgets provided are therefore aligned with “well below 2°C and pursuing 1.5°C” provided that aviation and shipping emissions do not exceed the pathway assumed in our analysis [4]. Failure to hold aviation and shipping emissions within the outlined allocation will reduce the carbon budget for UK regions, including for Transport East.

Step 6: Transport East is apportioned a part of the remaining UK carbon budget. Our recommended budget is based on sub-national allocation through 'grandfathering'. A grandfathering approach allocates carbon budgets on the basis of recent emissions data. The most recent annual CO₂ emissions for Transport East up to the Paris Agreement [12] (2011-2016) is averaged and compared to averaged data for the whole UK [13] over the same period. The carbon budget (2020-2100) for Transport East is then apportioned based on Transport East's average proportion of UK CO₂ emissions for the 2011-2016 period. CO₂ emissions in the carbon budget include emissions from fossil combustion within the region and a share of the emissions from national electricity generation (relative to the Transport East area's end-use electricity demand).

Step 7: Carbon emission pathways. The carbon budgets for Transport East are related to a set of illustrative emission pathways. These pathways show projected annual CO₂ emissions from energy use in Transport East and how these emissions reduce over time to stay within the budget. The energy-only CO₂ emissions for 5-yearly interim carbon budget periods are calculated in line with the framework set out in the UK Climate Change Act. It is the cumulative carbon budget and the 5 year interim budgets that are of primary importance as opposed to a long term target date. The combination of a Paris-compliant carbon budget and the projected emissions pathways can however be used to derive an indicative near zero carbon target year for Transport East. The near zero carbon year of 2041 is defined here as the point at which, on the consistent reduction rate curve, less than 5% of Transport East's recommended budget remains. Annual CO₂ emissions at this point fall below 0.76 MtCO₂ (CO₂ levels >96% lower than in 2015 – a Paris Agreement reference year).

3. Results

3.1 Energy Only Budgets for Transport East

Following the Method the recommended energy only CO₂ carbon budget for the Transport East area for the period of 2020 to 2100 is 116.5 MtCO₂. To translate this into near to long term commitments a CO₂ reduction pathway within the 116.5 MtCO₂ is proposed here. A consistent emissions reduction rate of -13.4% out to the end of the century is applied. In 2041 95% of the recommended carbon budget is emitted and low level CO₂ emissions continue at a diminishing level to 2100.

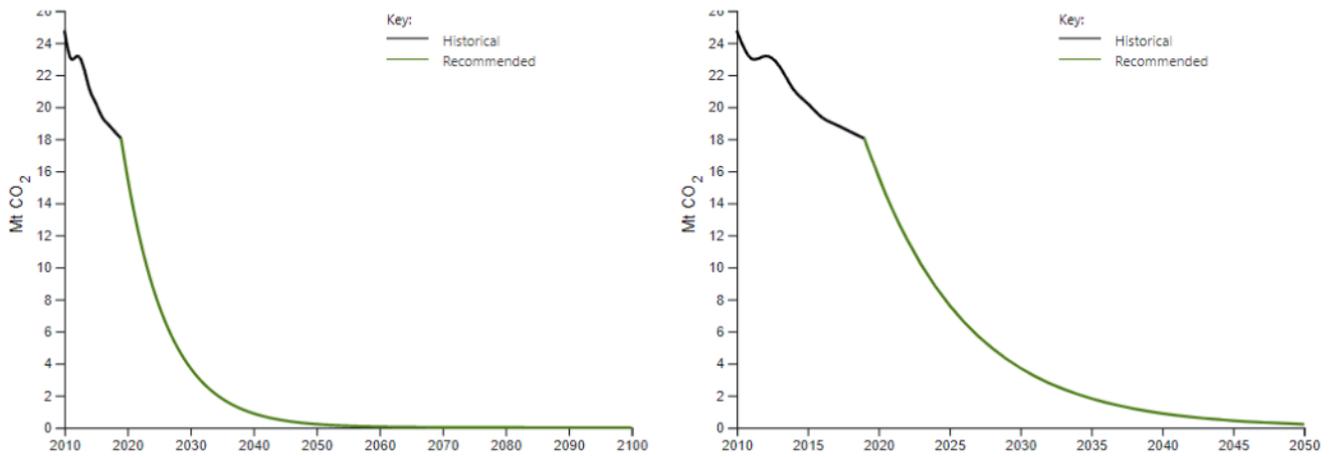


Figure 1a (left): Energy related CO₂ only emissions pathways (2010-2100) for Transport East premised on the recommended carbon budget. **Figure 1b (right):** Energy CO₂ only emissions pathways (2010-2050) for Transport East premised on the recommended carbon budget. **y-axis shows emissions in MtCO₂**

Table 1 presents the Transport East energy CO₂ only budget in the format of the 5-year carbon budget periods in the UK Climate Change Act. To align the 2020 to 2100 carbon budget with the budget periods in the Climate Change Act we have included estimated CO₂ emissions for Transport East for 2018 and 2019, based on BEIS provisional national emissions data for 2018 [14] and assuming the same year on year reduction rate applied to 2019. The combined carbon budget for 2018 to 2100 is therefore 153.0 MtCO₂.

Table 1: Periodic Carbon Budgets for 2018 for Transport East.

Carbon Budget Period	Recommended Carbon Budget (Mt CO ₂)
2018 - 2022	77.3
2023 - 2027	38.8
2028 - 2032	18.9
2033 - 2037	9.2
2038 - 2042	4.5
2043 - 2047	2.2
2048 - 2100	2.1

The recommended budget is the maximum cumulative CO₂ amount we consider consistent with Transport East's fair contribution to the Paris Agreement. A smaller carbon budget, with

accelerated reduction rates and an earlier zero carbon year, is compatible with this approach. It is however important that for an alternative zero carbon year the proposed 5 year budget periods are the same or lower that those specified in Figure 2. Furthermore meeting the budget must not rely on carbon offsets.

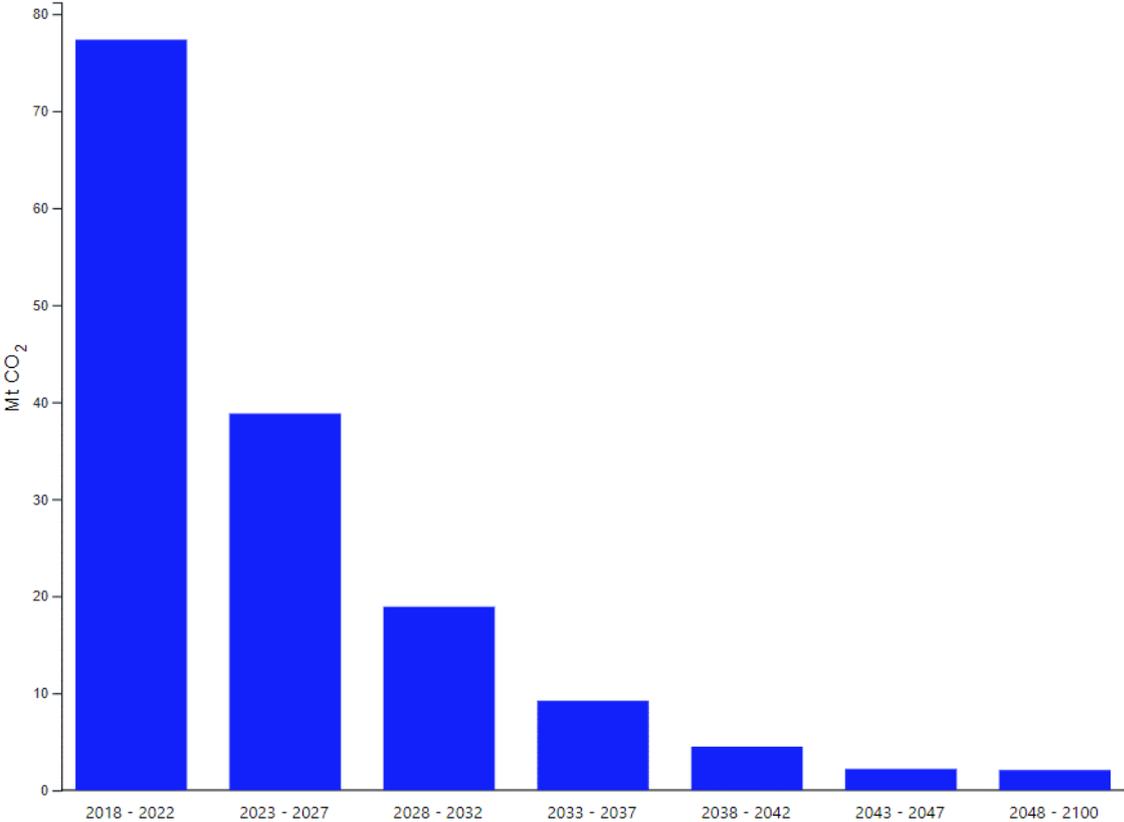


Figure 2: Cumulative CO₂ emissions for budget period (based on Table 1) from 2018 to 2100 for Transport East

3.2 Recommended Allocation Regime for Carbon Budget

The recommended carbon budget is based on a grandfathering allocation regime for subdividing the UK sub-national energy only carbon budget. There are three distinct allocation regimes that can be applied to determine sub-national budgets. We have opted to recommend one common approach for allocating carbon budgets that can be applied to all Local Authority areas. This enables straightforward compatibility between carbon budgets set at different administrative scales. For example this makes it easier for individual Local Authorities to calculate their own carbon budgets that are compatible with a budget set at Combined Authority scale. It also means that under the recommended carbon budgets, all Authorities are contributing to a common total UK carbon budget. If for example all Authorities selected the allocation regime that offered them largest carbon budget the combined UK budget would not comply with the objectives of the Paris Agreement. The common approach to allocation we recommend therefore further assures that the carbon budget adopted is Paris Agreement compatible.

We have chosen a grandfathering as our common allocation approach because, based on our analysis, it is the most appropriate and widely applicable regime within the UK.

Population and Gross Value Added^x (GVA) are alternative allocation regimes. Population shares the carbon budget equally across the UK on a per capita basis. In this allocation regime the UK population [15] is compared to that of Transport East [16] from 2011 to 2016. The carbon budget (2020-2100) for Transport East is then apportioned based on its average proportion of the UK population for the period 2011-2016. For regions where per capita energy demand deviates significantly from the average (e.g. a large energy intensive industry is currently located there) the budget allocated may not be equitable for all regions, therefore it is not recommended as the preferred allocation. GVA is used as an economic metric to apportion carbon budgets. For example, the UK total GVA [17] is compared to that of Transport East [17] from 2011 to 2016. The carbon budget (2020-2100) for Transport East is then apportioned based on Transport East's average proportion of UK GVA for the period 2011-2016. GVA can be useful as a proxy for allocation on economic value, however without an adjustment for the type of economic activity undertaken, areas with high economic 'value' relative to energy use can get a relatively large budget, while the inverse is true for areas with energy intensive industries, and/or lower relative economic productivity. We would therefore not recommend GVA as an appropriate allocation regime for all regions.

Table 2 presents the result outcomes for alternative allocation regimes – population and gross value added (GVA).

Table 2: Energy only CO₂ budgets and annual mitigation rates for Transport East (2020-2100) by allocation regime

Allocation regime (% of UK Budget allocated to Transport East)	UK Budget^x (MtCO₂)	Transport East Budget (MtCO₂)	Average Annual Mitigation Rate (%)
Grandfathering to Transport East from UK (5.2%)	2,239	116.5	-13.4%
Population split to Transport East from UK (5.4%)	2,239	120.8	-13.0%
GVA split to Transport East from UK (4.3%)	2,239	97.4	-15.6%

Pathway projections for the change in annual energy-only CO₂ emissions pathways for Transport East based on the carbon budgets in Table 2 are illustrated in Figure 3a & 3b.

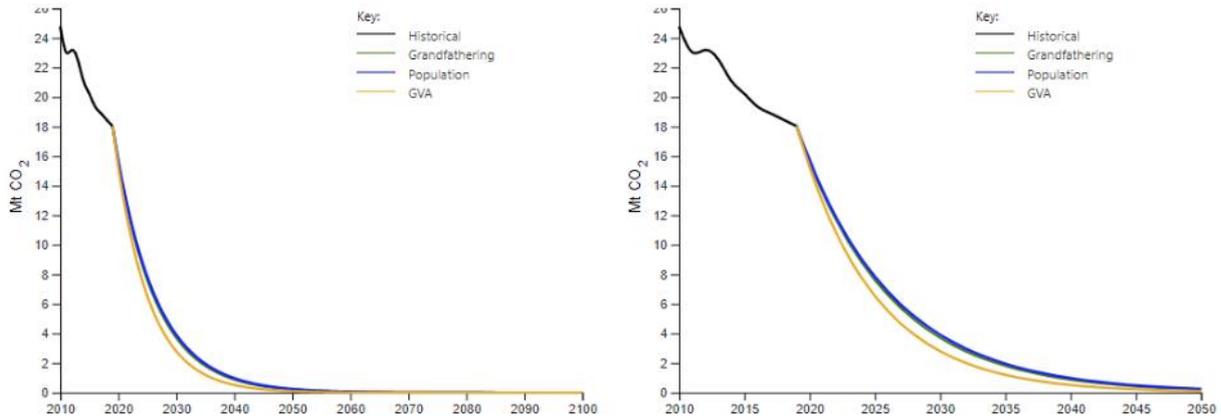


Figure 3a (left): Energy related CO₂ only emissions pathways (2010-2100) for Transport East premised on carbon budgets shown in Table 2. **Figure 3b (right):** Energy related CO₂ only emissions pathways (2010-2050) for Transport East premised on carbon budgets shown in Table 2. **y-axis shows emissions in MtCO₂**

3.3 Land Use, Land Use Change and Forestry emissions for Transport East

Land Use, Land Use Change and Forestry (LULUCF) consist of both emissions and removals of CO₂ from land and forests. We recommend that CO₂ emissions and sequestration from LULUCF are monitored separately from the energy-only carbon budgets provided in this report. Transport East should increase sequestration of CO₂ through LULUCF in the future, aligned with Committee on Climate Change's high level ambition of tree planting, forestry yield improvements and forestry management [18]. Where LULUCF is considered, we recommend it compensate for the effects of non-CO₂ greenhouse gas emissions (within the geographical area) that cannot be reduced to zero, such as non-CO₂ emissions from agriculture.

3.4 Non-CO₂ Emissions

The IPCC SR1.5 report identifies the importance of non-CO₂ climate forcers (for instance methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), sulphur dioxide (SO₂) and black carbon) in influencing the rate of climate change. However, a cumulative emission budget approach is not appropriate for all non-CO₂ greenhouse gases, as the physical and chemical properties of each leads to differing atmospheric lifetimes and warming effects [19]. There are also substantial relative uncertainties in the scale, timing and location of their effects.

We do not provide further analysis or a non-CO₂ emissions reduction pathway in this report. However the global carbon budget in the IPCC Special Report on 1.5°C, that our analysis is based on, assumes a significant reduction in rate of methane and other non-CO₂ emissions over time. Therefore to be consistent with carbon budgets Transport East should continue to take action to reduce these emissions.

The Department of Business Energy and Industrial Strategy’s Local Authority emissions statistics do not at this time provide non-CO₂ emissions data at the regional level. Given the absence of robust non-CO₂ emissions data, any non-CO₂ emissions inventory by other organisations at scope 1 and 2 for Transport East may form the basis of monitoring and planning for these emissions. We recommend considering the adoption of a LULUCF pathway that includes CO₂ sequestration sufficient to help compensate for non-CO₂ emissions within Transport East's administrative area.

4. Conclusions

The results in this report show that for Transport East to make its fair contribution to delivering the Paris Agreement's commitment to staying “well below 2°C and pursuing 1.5°C” global temperature rise, then an immediate and rapid programme of decarbonisation is needed. At 2017 CO₂ emission levels^{xi}, Transport East will exceed the recommended budget available within 7 years from 2020. **To stay within the recommended carbon budget Transport East will, from 2020 onwards, need to achieve average mitigation rates of CO₂ from energy of around -13.4% per year.** This will require that Transport East rapidly transitions away from unabated fossil fuel use. For context the relative change in CO₂ emissions from energy compared to a 2015 Paris Agreement reference year are shown in Table 3.

Table 3: Percentage reduction of annual emissions for the recommended CO₂-only pathway out to 2050 in relation to 2015

Year	Reduction in Annual Emissions (based on recommended pathway)
2020	23.1%
2025	62.5%
2030	81.8%
2035	91.1%
2040	95.7%
2045	97.9%
2050	99.0%

The carbon budgets recommended should be reviewed on a five yearly basis to reflect the most up-to-date science, any changes in global agreements on climate mitigation and progress on the successful deployment at scale of negative emissions technologies.

These budgets do not downscale aviation and shipping emissions from the UK national level. However if these emissions continue to increase as currently envisaged by Government, aviation and shipping will take an increasing share of the UK carbon budget, reducing the available budgets for combined and local authorities. **We recommend therefore that Transport East seriously consider strategies for significantly limiting emissions growth from aviation and shipping.** This could include interactions with the UK Government or other local authority and local enterprise partnership discussions on aviation that reflect the need of the carbon budget to limit aviation and shipping emissions growth.

CO₂ emissions in the carbon budget related to electricity use from the National Grid in Transport East are largely dependent upon national government policy and changes to power generation across the country. **It is recommended however that Transport East promote the deployment of low carbon electricity generation within the region and where possible influence national policy on this issue.**

We also recommend that the LULUCF sector should be managed to ensure CO₂ sequestration where possible. The management of LULUCF could also include action to increase wider social and environmental benefits..

Endnotes

Defined in terms of the administrative boundary of the Transport East area.

We base our global carbon budget on the latest IPCC Special Report on 1.5°C (IPCC SR1.5) findings on how carbon emissions relate to global temperatures. The budget value we have selected provides a 'likely' chance of staying below 2°C and offers an outside chance at holding temperatures to 1.5°C. As IPCC SR1.5, notes there are no emissions pathways for limiting warming to 1.5°C that do not rely upon significant carbon dioxide removal technology deployment [2]

Based on BEIS LA statistics 2017 CO₂ emissions Transport East (excluding aviation, shipping, process CO₂ emissions from cement production and those from LULUCF).

This is due to the near-linear relationship between cumulative CO₂ emissions and temperature is the result of various feedback processes and logarithmic relationship between atmospheric CO₂ concentrations and radiative forcing, as well as the changes in the airborne fraction of CO₂ emissions [19].

The 2019 amended UK Climate Change Act commits the UK to at least a 100% reduction in greenhouse gas emissions by 2050 from 1990 levels on the basis that the UK's 'carbon account' is 'net zero' by this point. This is not the same as zero greenhouse gas emissions by 2050. In this framing residual greenhouse gas emissions are net zero on the provision that they are balanced by greenhouse gas removals in the UK's carbon account.

Carbon offsetting refers to the purchase of a tradeable unit, representing emissions rights or emissions reductions, to balance the climate impact of an organisation, activity or individual. Based on IEA's ambitious 2 degree scenario on process CO₂ for the period 2020-2050,

subsequently extrapolating to zero by 2075

Grandfathering is based on the average proportion of CO₂ emissions from each Party in recent years.

Balanced approach at current basic prices

After deducting an emissions budget for aviation, shipping and military transport of 1,518 MtCO₂

Based on Transport East's 2016 CO₂ emissions (excluding aviation, shipping, process CO₂ emissions from cement production and those from LULUCF).

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Transport Action Network provides free support to people and groups pressing for more sustainable transport in their area and opposing cuts to bus services, damaging road schemes and large unsustainable developments

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