Islington Council's journey to 'people-friendly streets': Creating a better borough for all

APSE Highways & Street Lighting Advisory Group (Southern Region)

Martijn Cooijmans

Head of Strategic Projects & Transport Planning and Interim Head of Traffic

10 September 2020

Islington context

ISLINGTON

- **Small geographical area** (six square miles) – third smallest local authority area in the UK
- **Population**: approximately 233,000
- **High density**: most densely populated borough in the UK
- **Low car ownership**: 31% of Islington households - second lowest rate of England local authorities
- **Relatively few vehicle trips**: 16.6% of trips in Islington made by car
- **High public transport use**: 81% of trips made by sustainable transport (31% public transport)
- **Yet severe road congestion**: weekday delays of more the 1.5 minute per km
- **Forecasted growth** in population (15%) and jobs
- **Space is limited**: limited available road space

Challenges

ISLINGTON

Climate emergency

- Net zero carbon by 2030

Traffic casualties

- The most common cause of death for children in the UK aged 5 to 14 is being hit by a vehicle
- In Islington cycle trips are 5% of trips but people who cycle are involved in 30% of casualties

Inactivity – obesity crisis

- 22% - overweight/obesity levels of children at Reception
- 38% - overweight/obesity levels of children at Year 6

Air pollution

- Vehicles are responsible for approximately 50% of the emissions contributing to air pollution
- Premature death as a result of air pollution
- Respiratory problems as a result of air pollution
- Link between air pollution and Coronavirus

Data and research

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Benefits

- Walking and cycling improves physical and mental health and reduces air pollution
- Less traffic on residential streets will help create more pleasant communities

Impact of Covid

- Public transport capacity running at a fifth of pre-crisis levels
- Many journeys a day will need to be made by other means
- Modelling shows that without action, there will be significantly more motorised traffic than before the pandemic

If people switch only a fraction of journeys to cars, London risks grinding to a halt, air quality will worsen, and road danger will increase.

Statutory Guidance

ISLINGTON

Traffic Management Act 2004: network management in response to COVID-19

*"Local authorities in areas with **high levels of public transport use** should take measures to **reallocate road space to people walking and cycling**, both to encourage active travel and to enable social distancing during restart."*

Above from:

https://www.gov.uk/government/publications/reallocating-road-space-in-response-to-covid-19-statutory-guidance-for-local-authorities/traffic-management-act-2004-network-management-in-response-to-covid-19

Strategic context

Draft Transport Strategy

OBJECTIVE 3: EFFICIENT

Islington's limited road space will be managed by rebalancing priority towards walking, cycling and public transport by reducing the volume and dominance of motorised traffic, creating a more pleasant transport environment.

Corporate Strategy

Make it easier and safer for people to travel through the borough and beyond

- Improve air quality across the borough, especially near schools by closing streets at opening and closing times and install air quality monitors at every school
- Deliver at least one cycling improvement in every ward over the next four years, install 400 more bike storage facilities on streets and seek TfL support for more protected cycle routes
- Install 400 new electric vehicle charging points across the borough
- Convert all 11,350 streetlights in the borough to LED by March 2019
- Work towards banning lorries (HGVs) from driving on residential roads
- Work with TfL to remodel gyratories at Highbury Corner, Nags Head, Old Street and King's Cross

Draft Zero Carbon Strategy

ISLINGTON

Vision 2030:
Creating a Net Zero Carbon Islington by 2030

Budget Commitment

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Islington set to get first liveable neighbourhood as part of £10million spending announcement

PUBLISHED: 13:16 19 February 2020 | UPDATED: 17:57 19 February 2020 | Lucas Cumiskey

People-friendly streets

ISLINGTON

Aim of programme

- To make it easier and safer to walk and cycle
- For people to be healthier
- To allow social distancing
- To help people enjoy their area

People-friendly streets (cont.)

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1. Low Traffic Neighbourhoods (LTNs)

Borough-wide programme – third to be delivered by the end of 2020

- Two implemented
- Two announced (of which one under construction)
- One to be announced imminently

2. School streets

All primary schools not on main roads to be School Streets by end of 2020 (timed & camera enforced)

- 13 historic School Streets
- 16 delivered over the summer
- 10 more to be delivered by end of year

People-friendly streets (cont.)

ISLINGTON

3. Cycleways

- One permanent cycle lane under construction
- Two pop up cycle lanes under construction (one with neighbouring borough)
- One permanent cycle lane soon to commence (working with neighbouring borough)
- One pop up cycle lane soon to commence (working with neighbouring borough)
- One ‘quietway’ soon to be completed through delivery of a series of LTNs

Process: early engagement

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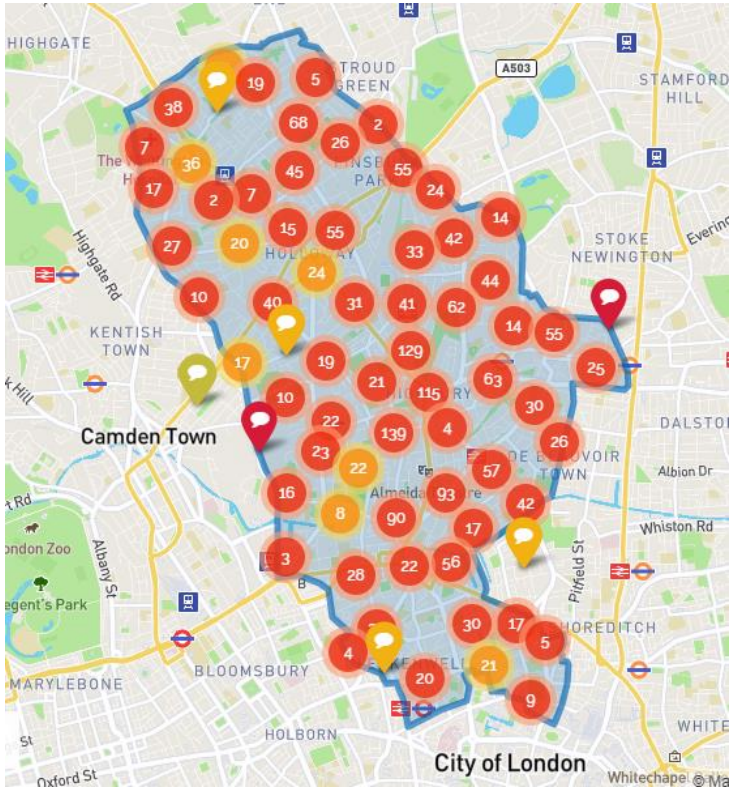
Commonplace platform

- Launched in May
- Asking for comments
- Map
- 4,500 comments



Low Traffic Neighbourhoods: example (St Peter's LTN)

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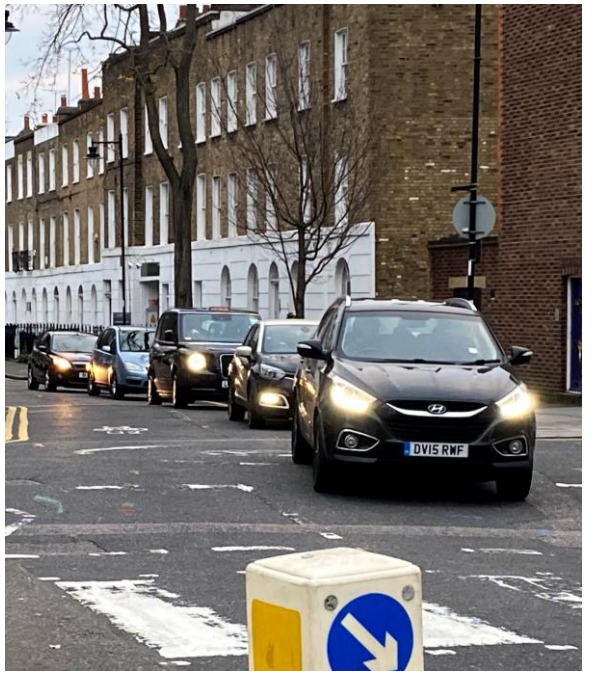

Prebend Street

St Peters LTN (delivered)

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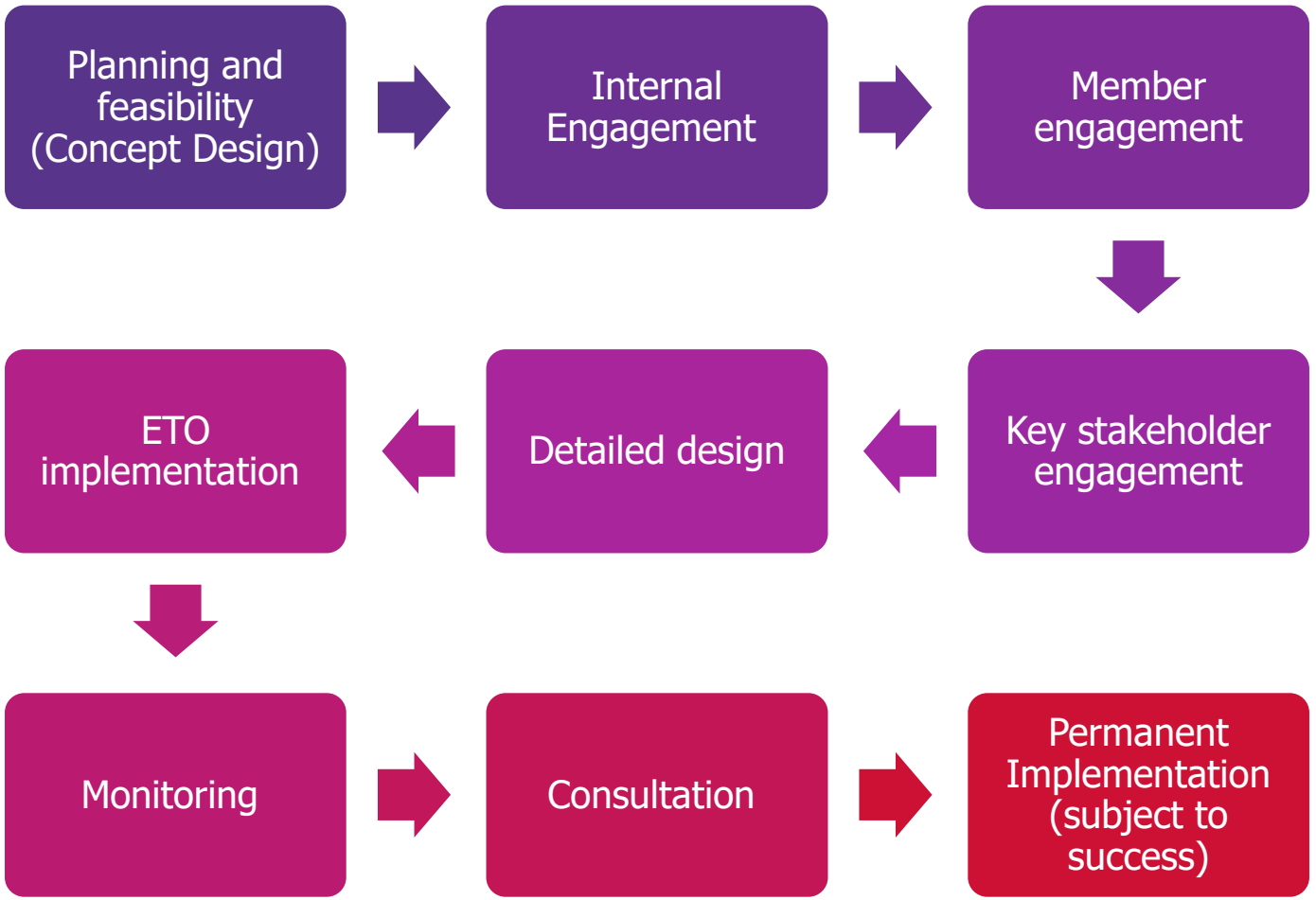
Some local trips are now longer but the same trips are safer by walking or cycling because there is less traffic

Process: step-by-step



Successes

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Politically

- Unwavering political leadership
- Close and direct relationship between political leadership and delivery team
- Not giving in to opposition

Operationally

- Organisation: Corporate priority (support up to and including CEO)
- Team spirit: Extremely committed and hard working team of project managers and engineers
- Project team: Project Manager + Engineer structure
- Cross-team working: Close working relationship across teams (e.g. with Parking)
- Internal feedback: Fast turn-around from Managers, Directors, Comms team, politicians

Financially

- Baseline council budget to support the programme (whilst bidding for external funding)

The above making fast delivery possible

Challenges

Opposition from:

- Taxi drivers
- Some motorists
- Some disabled people
- Some delivery companies

Opposition in the form of:

- Many angry emails
- Weekly protests
- Threats of legal action
- Personal threats to councilors and staff on site
- Vandalism (bollards, signs, cameras, pins on the road)

Challenges

Main points of critique:

- That it would be undemocratic – as no prior consultation
- That it would limit access for emergency services
- That it would discriminate against disabled people
- That it would increase traffic on the main roads and lead to (more) congestion
- That it would lead to more air pollution

- That it would lead to longer car journeys – some local car journeys will indeed be longer

Lessons learnt – Communication & Consultation

Some teams not bought into the principles of the programme

- Lesson: meet with key teams early on

Difficult to get the comms message right

- Lesson: bringing in external specialist advice to help shape the message and narrative

People don't understand the proposals

- Lesson: clear graphics and explanation of local access when schemes go live

Delivery without prior consultation – things are missed

- Lesson: take some time to research areas and involve ward councillors (more)

Delivery without prior consultation – leads to high levels of correspondence

- Lesson: have enough resources lined up to draft responses as soon as a new scheme goes live

Lessons learnt - Resources

Fast pace delivery has its limits: staff get tired

- Lesson: recruiting more staff: engineers, project managers, managers and comms staff

Fast pace delivery leads to errors

- Lesson: peer review sessions and building in some more time within programme for checks

Staff resource needed after implementation

- Lesson: some unforeseen things will need fixing

Lessons learnt - Operational

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Importance of access for emergency services

- Lesson: meet with all emergency services to understand their requirements
- Lesson: strike a balance between bollards and cameras

Main road network turning restrictions

- Lesson: map access and agrees early on to anticipate potential problems with restrictions on main roads

Opposition / threat of legal action

- Lesson: Follow due process, including carrying out equalities impact assessments

Strong monitoring strategy

- Lesson: Measure as much as possible:
  - Traffic patterns: inside LTNs and outside (any displacement)
  - Pedestrian behavior and cycle flows
  - Bus journey times
  - Air quality
  - Crime and ASB
  - Emergency Services response times

For discussion

1. Exemptions: balance between any exemptions and diluting the benefits
2. Emergency services access: bollards versus cameras?
3. Implementation as trials: with or without prior consultation?
4. Other?

Questions & Discussion

Martijn Cooijmans – Islington Council

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Are you ready for the next disaster?

- RICHARD HAYES

- Past President
- INSTITUTE OF HIGHWAY ENGINEERS

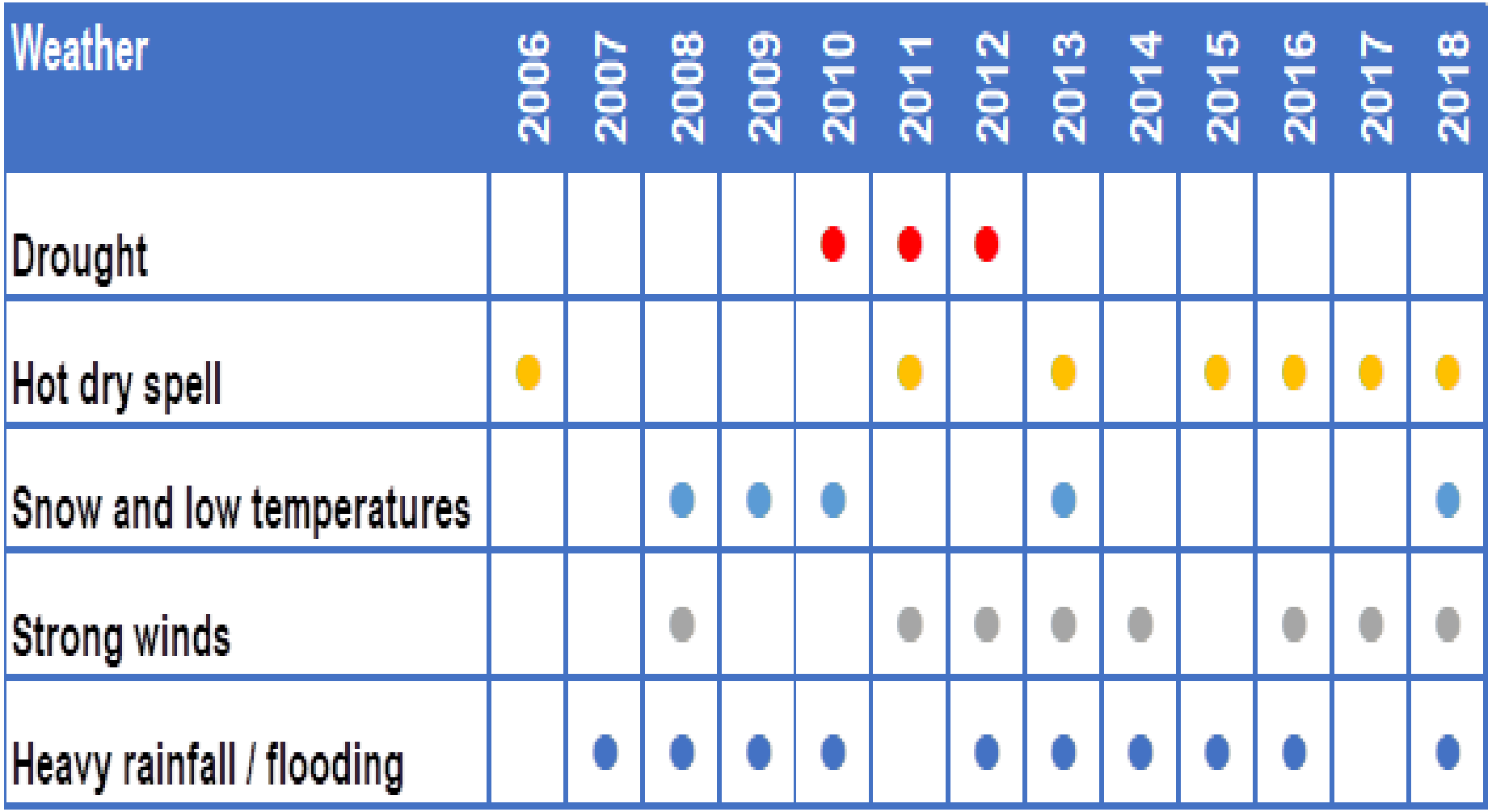
- September 2020

Highway Impacts of a Changing Climate

- 2019-Hottest July followed by one of wettest ever August's
- Roads and Bridges untested by modern weather
  - **30%** more intense heat, cold, rain, snow
  - **30%** chance in any one year of a severe event
  - A severe event is **30** times more likely
- Highway Teams need better training to respond safely

LGTAG

The Local Government **Technical Advisers Group**



Source: - Adapted by James Elliott from Met Office Information

Excellence in Resilience Planning

- **Work better to understand scale of impacts**
- **Need better predictive weather assessment on assets**
- **Councils & Highway Authorities must**
  - **Stress test for climate change**
  - **Map out the impacts on their resilient networks**
  - **Skill up teams and ensure live exercise with partners**
- **To think beyond historic events**
- **To think 30 30 30**

LGTAG

The Local Government **Technical Advisers Group**

2019 – its been another quiet year

- Named Storms
- Erik 08 - 09 February 2019
- Freya 03- 04 March 2019
- Gareth 12-13 March 2019
- Hannah 27 April 2019
- Hurricane Lorenzo 20 Sept- 2 Oct 2019
- Yorkshire 7 November 2019

A storm is named in the UK when it has the potential to cause disruption or damage, from either wind, rain, snow, or a combination of the three. The Met Office might also be forced to issue amber, yellow or red warnings for wide swathes of the country. British storms started being named in 2015, with a view to making it easier for the media and the governments to distinguish between the different storms

2020 the other pandemic

- January - Australian bush fires
- February –wettest on record
- Spring –driest for many years
- August – fires in Surrey. Flooding
- August – storms Ellen and Francis

2020/21 Storm names

Meanwhile last month on the M4


UK heatwave: Thunderstorms and flash floods after scorching heat

UK weather latest: Heatwave GONE as ferocious storm heads towards UK -

UK heatwave: Thursday could be Britain's hottest day on record, Met Office says


UK heatwave causing roads to
‘melt like chocolate’’


Railway resilience
‘deteriorating’ in bad weather
– ORR

And that’s without any civil emergencies

- Terrorist attacks
- Multiple road traffic accidents
- Major power failures
- Brexit
- Covid -19

Presentation main points

- **Code of Practice on Resilience**
- **What should you be doing?**
- **What are you really doing?**
- **How can you cope with the unknown?**
- **How can you protect your valuable assets?**

Well manages highway infrastructure says…..

Section A.6 Network Resilience

- RECOMMENDATION 20 – RESILIENT NETWORK Within the highway network hierarchy a Resilient Network should be identified to which priority is given through maintenance and other measures to maintain economic activity and access to key services during extreme weather.

Well manages highway infrastructure says…..

Section A.6 Network Resilience

- RECOMMENDATION 21 – CLIMATE CHANGE ADAPTATION
  The effects of extreme weather events on highway infrastructure assets should be risk assessed and ways to mitigate the impacts of the highest risks identified.

What should you be doing?

- Assess the relevant types of likely events
- Considering the recommendations in the 2014 Transport Resilience Review
- Engage with Local resilience Forums
- Consider the changes in Climate and their effect on the highway network
- Reinforce the asset
- Revise current operations to ensure a risk based approach is being considered

What are you doing?

- Filling sandbags and ….

How can you cope effectively?

Training and exercising on various scenarios

Re- assess existing arrangements

Comply with WMHI

Ensure staff are competent and can plan for the foreseeable events

Stress Test systems

Ensure staff and resources know what they can AND cannot do

An IHE Solution- train key staff

- Competence based assessment for key individuals in local highway authorities
- Designed by senior people who have hands-on experience of major incidents
- What works, what doesn't work and how to learn from previous examples
- How funding can assist
- Extend your network of assistance
- Use of other resources

What happens next?

- Pilot course in early 2020
- Course validation
- Courses organised across the UK during 2021 and beyond
- Competence based assessment
- National register of competent individuals
- Database of ongoing incidents
- DfT approved and seeking support form Scotland and wales and Northern Ireland authorities

Simple solutions to improving resilience

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Simple solutions to improving resilience

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Simple solutions to improving resilience

- Resilience begins with very basic maintenance
- Don’t ignore these activities

- Sweeping, cleansing, tidying up and all types of regular maintenance

- Good Housekeeping

What happens next?

Richard Hayes

www.theihe.org

INSTITUTE OF HIGHWAY ENGINEERS

Application of recycled waste materials for making a new and green pavement base/subbase

10th September 2020

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- One of the most potential environmental challenges around the world is the generation of billions of tonnes of solid wastes.

- The wastes can be recycled and reused in civil engineering projects to reduce the consumption of quarry-based virgin materials, alleviate disposals in landfill and minimize greenhouse gas emissions.

- Surprisingly, about 30% of the worldwide greenhouse gas emissions and air pollution are being generated by pavement-related industries.

- Huge amounts of virgin and natural materials and resources are being consumed by the same industries.

- Construction and demolition (C&D) materials, such as recycled concrete aggregate (RCA) and crushed rock (CR), as well as solid wastes, such as glass and scrap tyres, comprise a significant proportion of all the generated wastes around the world.

- An alternative approach to alleviate such negative effects is to use the recycled wastes for construction projects.

- Therefore, recycling and reusing of the wastes in road applications, instead of natural resources, will significantly result in decreasing the carbon foot-print of pavements.

- Around 534, 531 and 20 million tonnes of C&D wastes are being generated each year in USA, European Union and Australia, respectively.

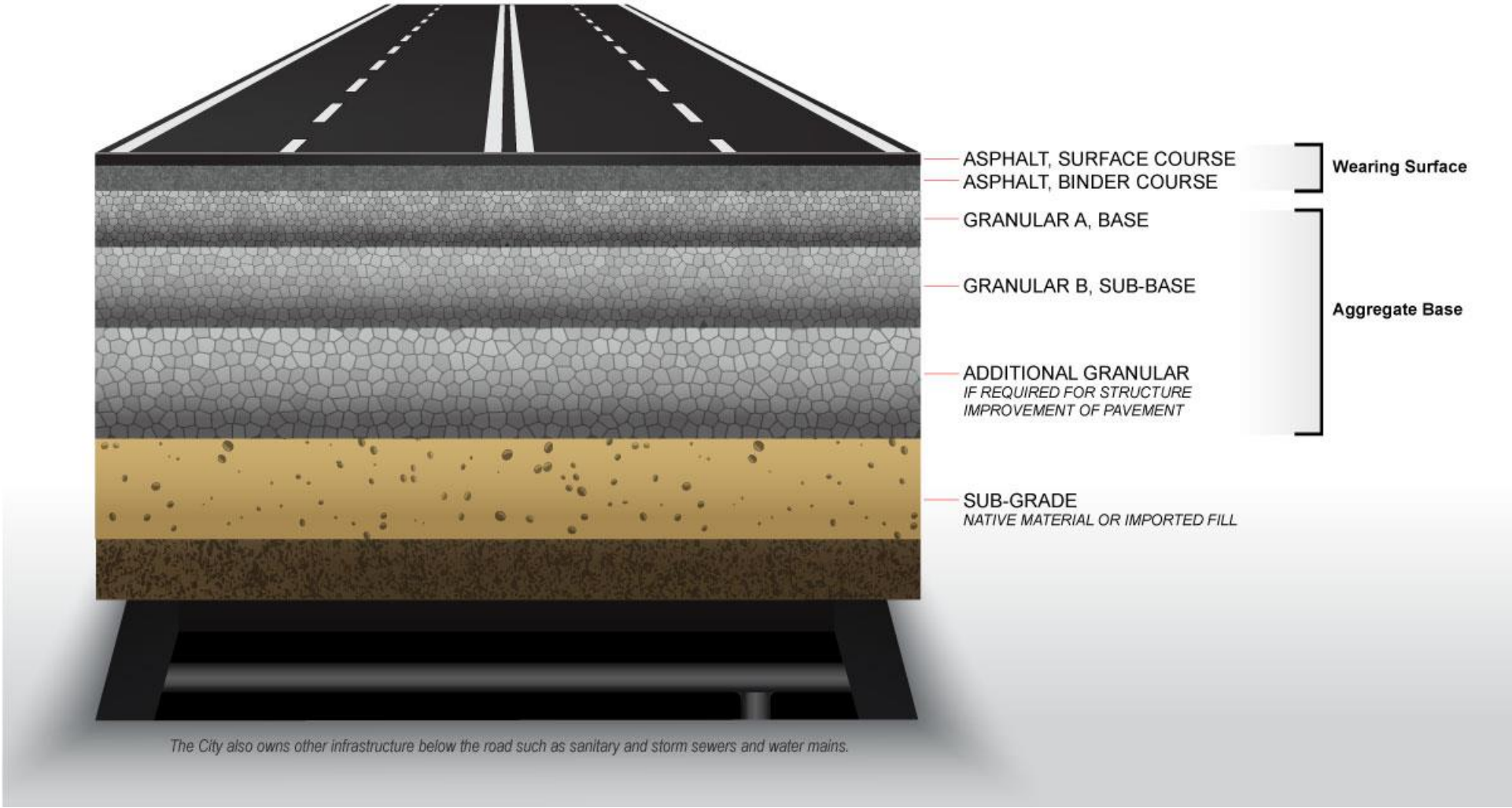
- Construction and demolition (C&D) materials along with industrial and commercial wastes constitute more than 80% of the waste materials received for reprocessing in the state of Victoria, Australia.

- Annually, around, 4 and 0.5 million tonnes of scrap tyres are stockpiled in USA and Australia, respectively.

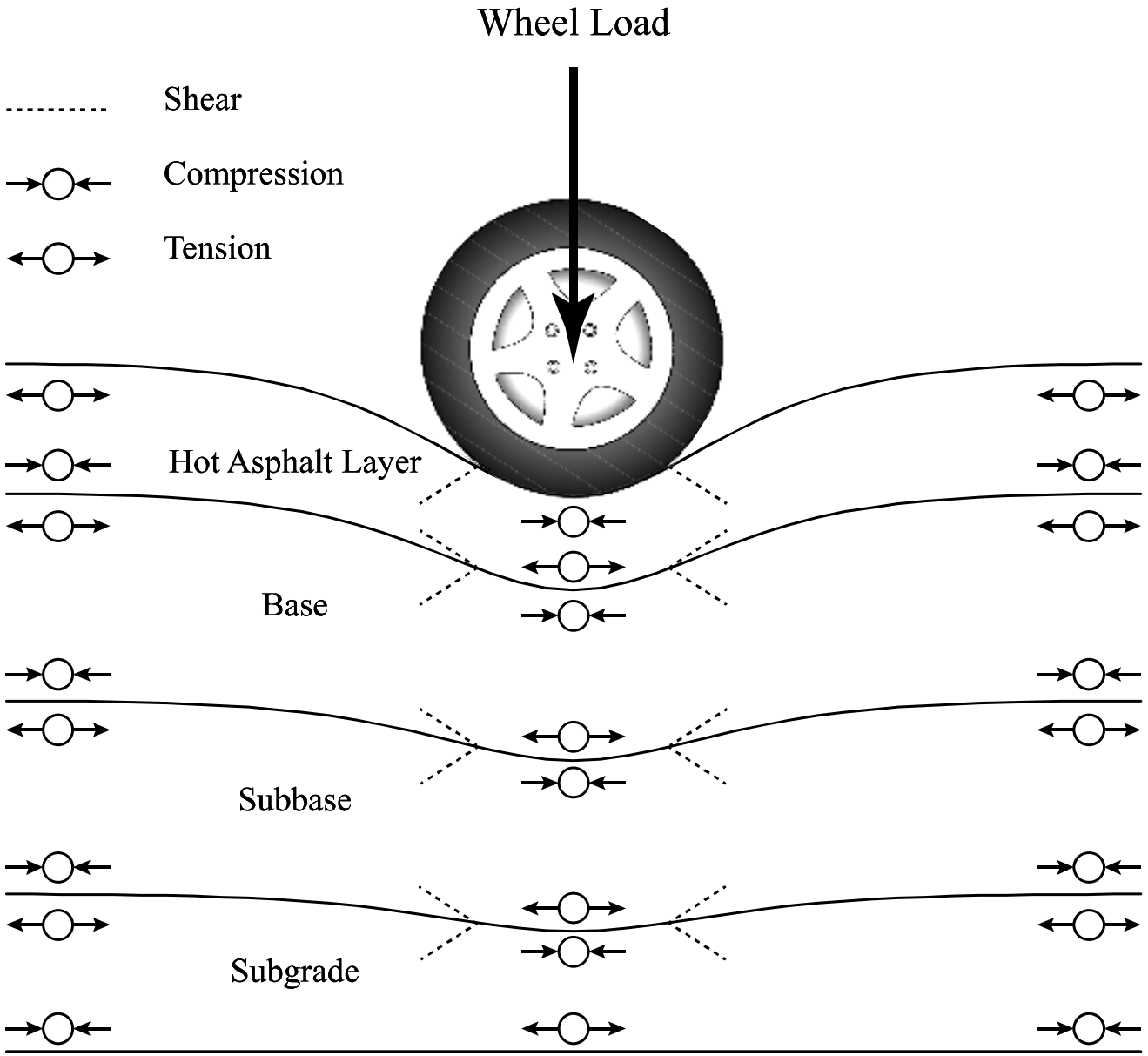
- Managing the generated non-biodegradable waste tyres would be a challenging issue due to their sheer volume and size.

- Crumb rubber provides good water resistance with low absorption, low shrinkage, acid resistance, high impact resistance, and excellent thermal and sound insulation, and can improve the impact resistance, toughness and fatigue performance of base and subbase of roads.


Demolition:
C&D wastes are generated from demolition
Separation:
Wastes are separated into different waste and recycling streams
Collection:
C&D wastes are collected from different sources
Sorting and Recovery:
Recovered C&D wastes are sorted for remanufacturing
Production:
New aggregates are generated from raw materials and recycled C&D wastes
Construction:
Aggregates are used for different civil engineering applications
Recourses flow in circular economy

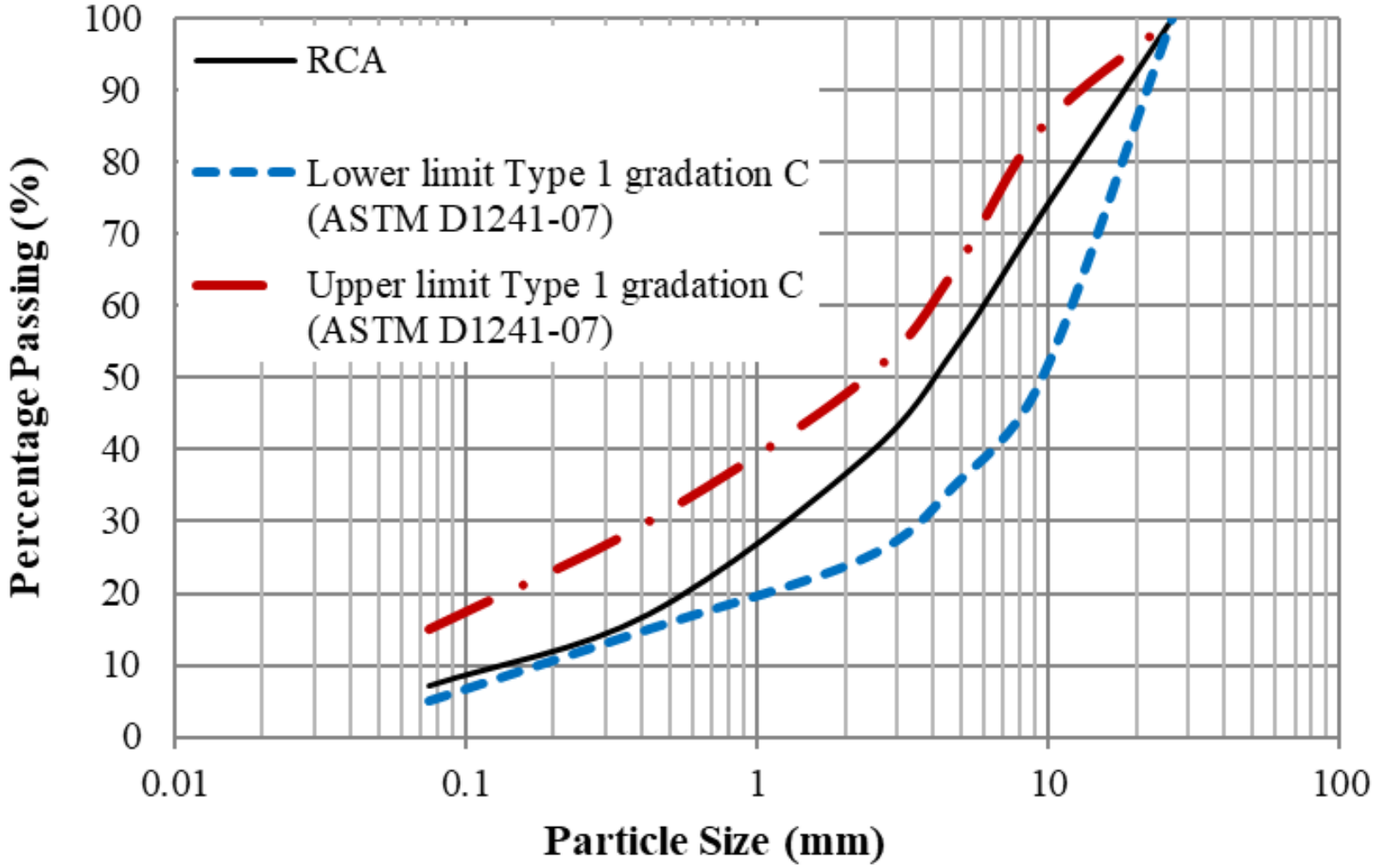


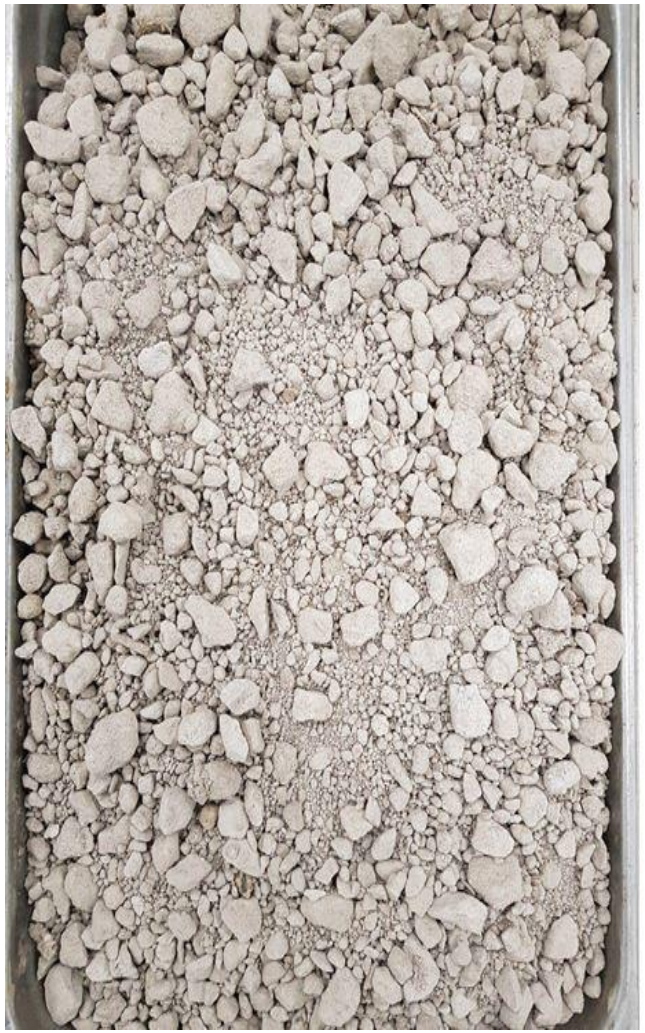
Flexible pavement consists of asphalt layers over one or more unbound granular layers known as base and subbase layers.


Wheel Load
Shear
Compression
Tension
Hot Asphalt Layer
Base
Subbase
Subgrade

Geotechnical properties of RCA

Geotechnical properties	RCA	Standard
Fine content (%) (< 75 μm)	7	AS 1141.11.1 (2009)
Sand content (%) (75 μm - 4.75 mm)	30	AS 1141.11.1 (2009)
Gravel content (%) (> 4.75 mm)	63	AS 1141.11.1 (2009)
Coefficient of uniformity (C_u)	42.86	AS 1141.11.1 (2009)
Coefficient of curvature (C_c)	2.01	AS 1141.11.1 (2009)
Particle density (t/m^3)	2.65	AS 1141.6.1 (2000)
Maximum dry density (t/m^3)	2.01	AS 1289.5.2.1 (2017)
Optimum moisture content (%)	12	AS 1289.5.2.1 (2017)
Liquid limit (%)	35	AS 1289.3.1.1 (2009)
Plasticity index	6	AS 1289.3.2.1 (2009)
Flakiness index (%)	12	AS 1141.15 (2018)
Colour	Grey	-


RCA
Lower limit Type 1 gradation C (ASTM D1241-07)
Upper limit Type 1 gradation C (ASTM D1241-07)
Percentage Passing (%)
100
90
80
70
60
50
40
30
20
10
0
0.01
0.1
1
10
100
Particle Size (mm)



Part A

Experimental test results of the RCA samples containing different percentages of rubber with two different sizes

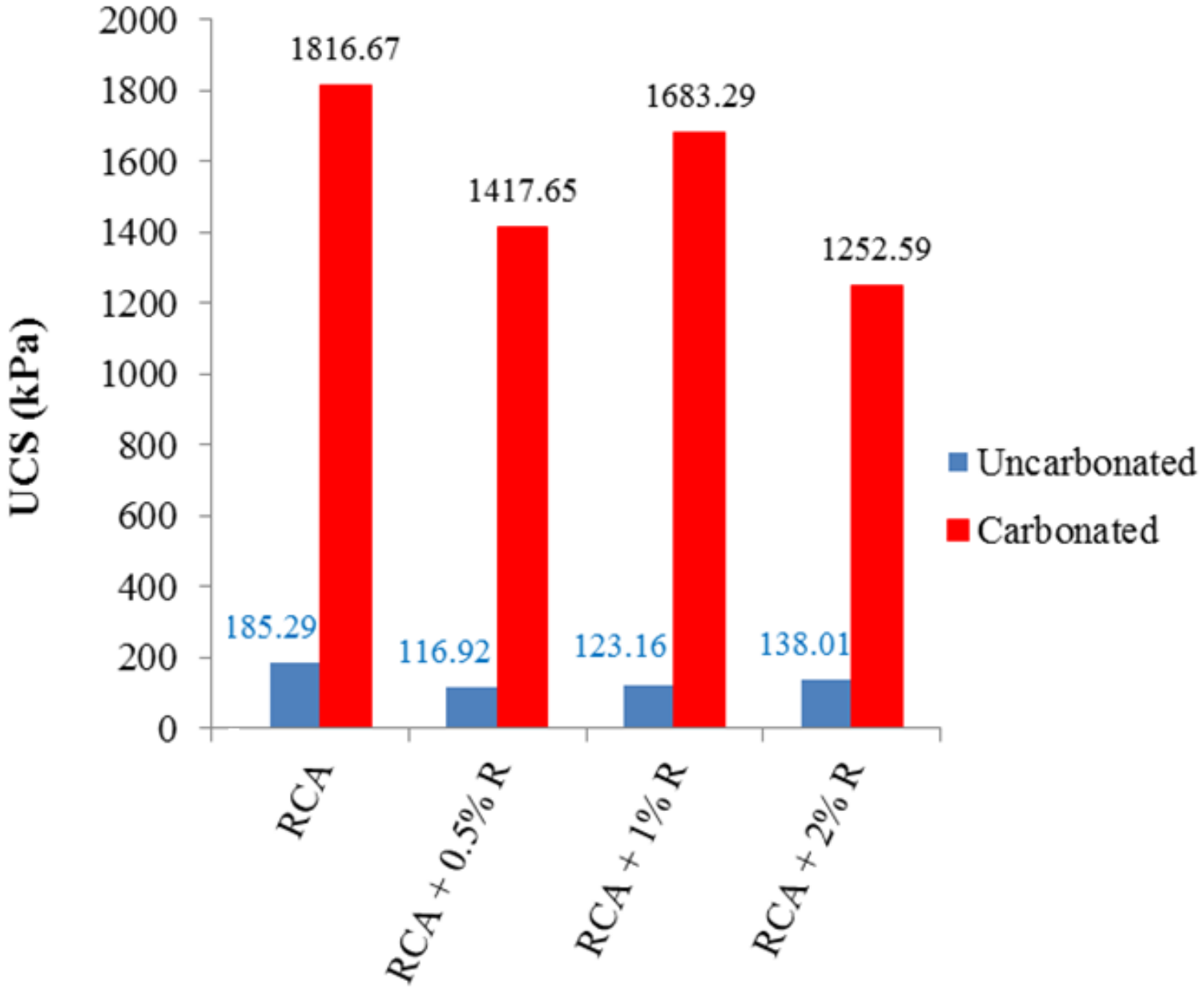
- All the samples mixed with crumb rubber **met** the minimum required value of **CBR** (i.e., 80%), **except** for the samples with **2% coarse rubber**.
- Inclusion of rubber led to **decrease** of **UCS**. But, the inclusion of both coarse and fine rubbers led to an **increase** in the **deformability** index of the samples.
- The strength of RCA **increased** with the content of **fine** rubber but **decreased** with the content of **coarse** rubber in terms of **CIV** values.
- It is worth mentioning that **all the results** obtained from the aggregate crushing value and LA tests were less than the maximum allowable **ACV** and **LA** values of **35%**.

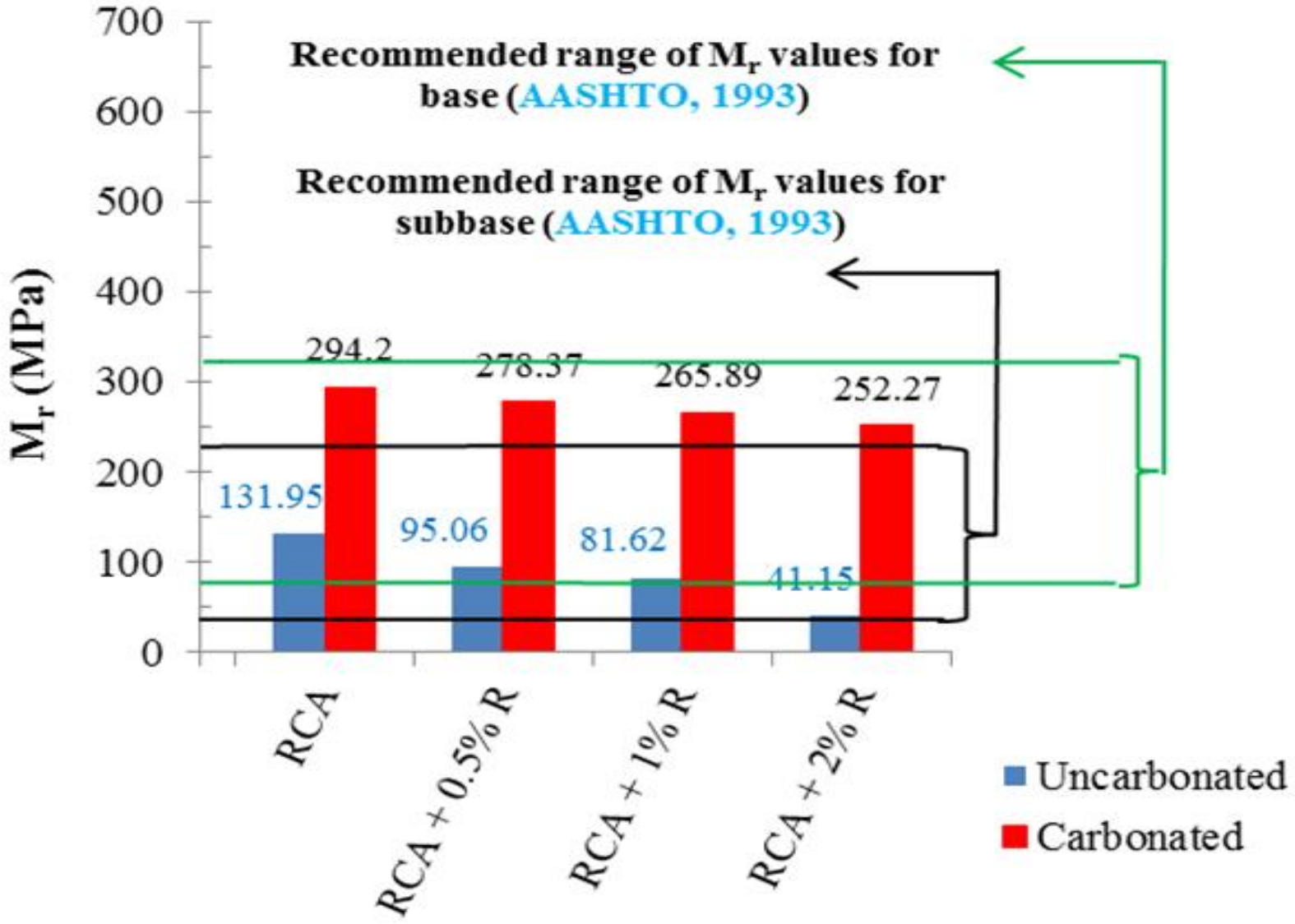
- **Resilient modulus decreased** as the rubber content increased.
- Based on the **permanent deformation** results, **some** of the samples could be considered for base/subbase applications
- The **coarse crumb** rubber resulted in **higher cohesions** and **internal friction angles** than the fine rubber.
- Based on the results of the shear strength properties, it was concluded that the samples would **meet** the shear strength requirements for pavement base/subbase applications.

- Although the inclusion of rubber led to **decrease some** of the **geotechnical properties** of the aggregates, it provided **higher flexibility**, **improved toughness performance**, and **absorbed plastic deformations/energy**.
- The addition of fine crumb rubber resulted in higher properties than that of the coarse rubber.
- Addition of **1% fine crumb rubber** to the aggregates provided the **better** geotechnical properties compared to the other samples **containing rubber**.

Part B

Effect of carbonation curing on RCA containing rubber


2000
1800
1600
1400
1200
1000
800
600
400
200
0
UCS (kPa)
1816.67
1683.29
1417.65
1252.59
185.29
116.92
123.16
138.01
Uncarbonated
Carbonated
RCA
RCA + 0.5% R
RCA + 1% R
RCA + 2% R


Recommended range of M_r values for base (AASHTO, 1993)
Recommended range of M_r values for subbase (AASHTO, 1993)
M_r (MPa)
700
600
500
400
300
200
100
0
294.2
278.37
265.89
252.27
131.95
95.06
81.62
41.15
RCA
RCA + 0.5% R
RCA + 1% R
RCA + 2% R
Uncarbonated
Carbonated

Moving Forward

Glass and C&D

Brown coal fly ash and C&D

Moving Forward

- **Plastic and C&D**
- **Geopolymer brown coal fly ash and C&D**
- **Polymer and C&D**
- **Stabilization of clay soils as subgrade layer with different recycled waste materials**
- **Concretes incorporating various waste materials**
- **International Collaboration!?**

Publications

Mohammad Saberian, Jie Li, Salpadoru Perera, Gang Ren, Rajeev Roychand, Hamayon Tokhi, (2020). An experimental study on the shear behaviour of recycled concrete aggregate incorporating recycled tyre waste. Construction and Building Materials, 264, 120266.

Mohammad Saberian, Jie Li, Mahdi Boroujeni, David Law, Chun Qing Li, (2020). Application of demolition wastes mixed with crushed glass and crumb rubber in pavement base/subbase. Resources, Conservation and Recycling, 156, 104722.

Mohammad Saberian, Jie Li, Bao Tach Nguyen, Sujeeva Setunge, (2019). Estimating the resilient modulus of crushed recycled pavement materials containing crumb rubber using the Clegg impact value. Resources, Conservation and Recycling, 141, 301 307.

Mohammad Saberian, Long Shi, Amir Sidiq, Jie Li, Sujeeva Setunge, Chun-Qing Li, (2019). Recycled concrete aggregate mixed with crumb rubber under elevated temperature. Construction and Building Materials, 222, 119-129.

Mohammad Saberian, Jie Li, Sujeeva Setunge, (2019). Evaluation of permanent deformation of a new pavement base and subbase containing unbound granular materials, crumb rubber and crushed glass, Journal of Cleaner Production, 230, 38-45.

Mohammad Saberian, Jie Li, Bao Nguyen, Mahdi Boroujeni, (2020). Experimental and analytical study of dynamic properties of UGM materials containing waste rubber. Soil Dynamics and Earthquake Engineering, 130, 105978.

Publications

Mohammad Saberian, Jie Li, (2018). Investigation of the mechanical properties and carbonation of construction and demolition materials together with rubber. Journal of Cleaner Production, 202, 553-560.

Mohammad Saberian, Jie Li, (2019). Long-term permanent deformation behaviour of recycled concrete aggregate with addition of crumb rubber in base and sub-base applications. Soil Dynamics and Earthquake Engineering, 121, 436-441.

Mohammad Saberian, Jie Li, Donald Cameron, (2019). Effect of Crushed Glass on Behavior of Crushed Recycled Pavement Materials Together with Crumb Rubber for Making a Clean Green Base and Subbase. Journal of Materials in Civil Engineering, 31, 7, 04019108.

Mohammad Saberian, Jie Li, Bao Nguyen, George Wang, (2018). Permanent deformation behaviour of pavement base and subbase containing recycle concrete aggregate, coarse and fine crumb rubber. Construction and Building Materials, 178, 51-58.

Jie Li, Mohammad Saberian, Bao Tach Nguyen, (2018). Effect of crumb rubber on the mechanical properties of crushed recycled pavement materials. Journal of Environmental Management, 218, 291-299.

Mohammad Saberian, Jie Li, Mahdi Boroujeni, David Law, Chun Qing Li, (2020). Application of demolition wastes mixed with crushed glass and crumb rubber in pavement base/subbase. Resources, Conservation and Recycling, 156, 104722.

Summary

- Our previous extensive series of experimental testing could prove the application of recycled materials for the construction of pavement base, subbase and subgrade.
- Local councils - implementing our results as trial roads.
- International collaborations.

Dr Paul Sargent

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Research Interests & Activities

- Geotechnical stabilisation of soft soils
- Geomechanical characterisation of natural and cemented soils (experimental and numerical modelling)
- Development of low carbon cementitious binders for soil stabilisation and geopolymers, utilising industrial wastes (slags, construction/demolition mineral wastes, biochar) and post-consumer mixed plastic waste to improve circular economy
- Use of Big Data / data analytics for earth structure health monitoring and behavioural predictions

Collaboration with Industry in North East England

- Interest from Stockton Borough Council for incorporating plastic waste into pavements (asphalt and/or sub-base) – willing to provide access to quiet industrial estate access road for site trials
- Costain currently principal contractor for delivering 3 major new road schemes in Newcastle (A1 and A19) – interested in developing and implementing eco-friendly pavement materials

THANK YOU