

Tar Very Much

PART II

Contents

Tar?

Plan A: Leave it in

Plan B: Recycle it into a product

.....some practical “considerations”



Tar?

- Road Tar (derived from Coal Tar) was used interchangeably with bitumen until the early 1980's (less volatiles: phenols, cresols)
- Road Tar contains a complex mix of hydrocarbons – some of which are carcinogenic(H7) and some toxic to aquatic life (H14)
- Road Tar contains short chain polycyclic aromatic hydrocarbons (PAH) not present in bitumen
- Certain PAH marker compounds are used to identify the possible presence of Road Tar
- In Europe and UK - waste legislation identifies bituminous mixtures containing coal tar exceeding a defined threshold as Hazardous. [EWC 17 03 01]
- The process of assessing the road pavement with the road owner should ensure that materials in the road and in Site Won asphalt are identified if they contain markers for Road Tar

Be definitive

Plan A: Roads containing tar

If you know where the “tar” layers are, can you leave it in place?

Here be
“tar”?



If you know where the “tar” layers are, can you leave it in place?



A. Overlay or conventional inlay

Q: depth, consistency, condition and design requirements

B. Minimise inlay thickness

- EME2
- PMB modified asphalts
- Crack inhibitors

Plan A: Roads containing tar

If you know where the tar layers are, can you leave it in place?

Health and Safety



Waste Management



Planning



Technical



Operational



Commercial



If no, then can you reuse or recycle it?



Product

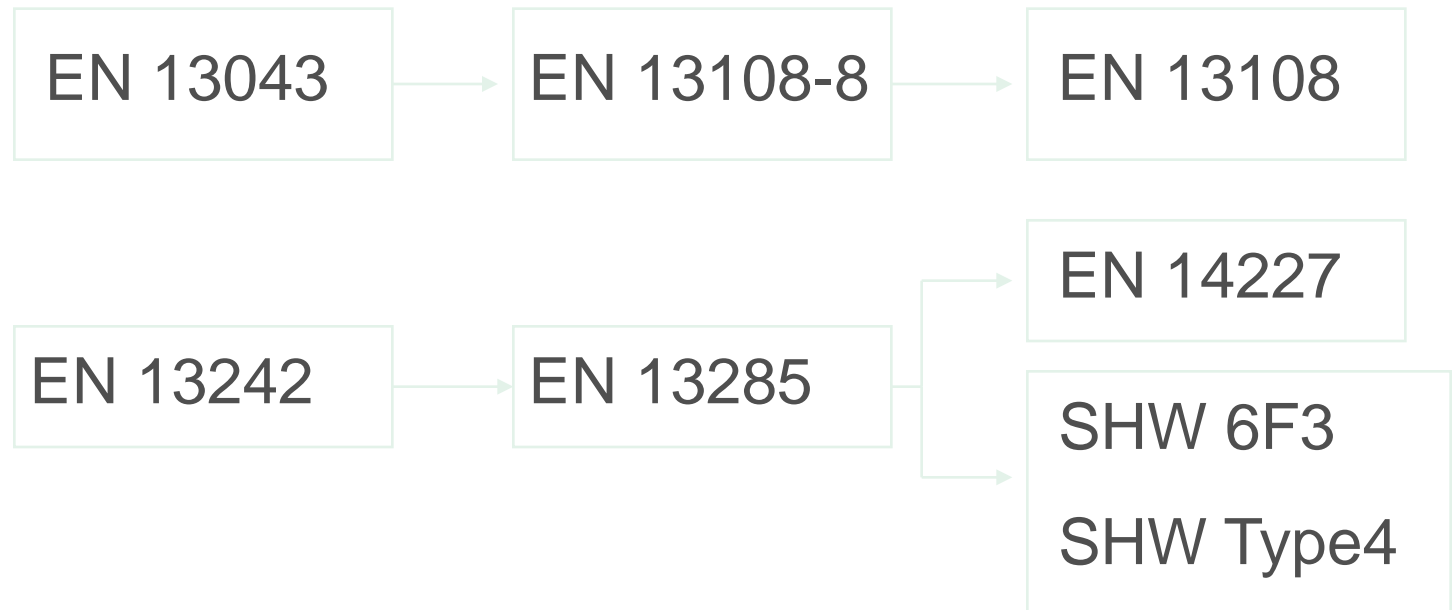
Even when the asphalt road is no longer serviceable, the asphalt within the road is 100% re-useable

When re-using reclaimed asphalt the key properties of the core constituents

- Aggregates type including high PSV aggregate
 - Bituminous binders

Asphalt with reclaimed asphalt constituent is high performance and sustainable

Product standards & specifications



Definitions in BS EN 13108-8

Site Won Asphalt = the material to be recycled

Reclaimed Asphalt (RA)= processed site won, classified for asphalt

Feedstock of Reclaimed Asphalt = quantity of RA documented in a Type Test

Plan B: Recycle it back into asphalt?



Health and Safety

Waste Management

Planning

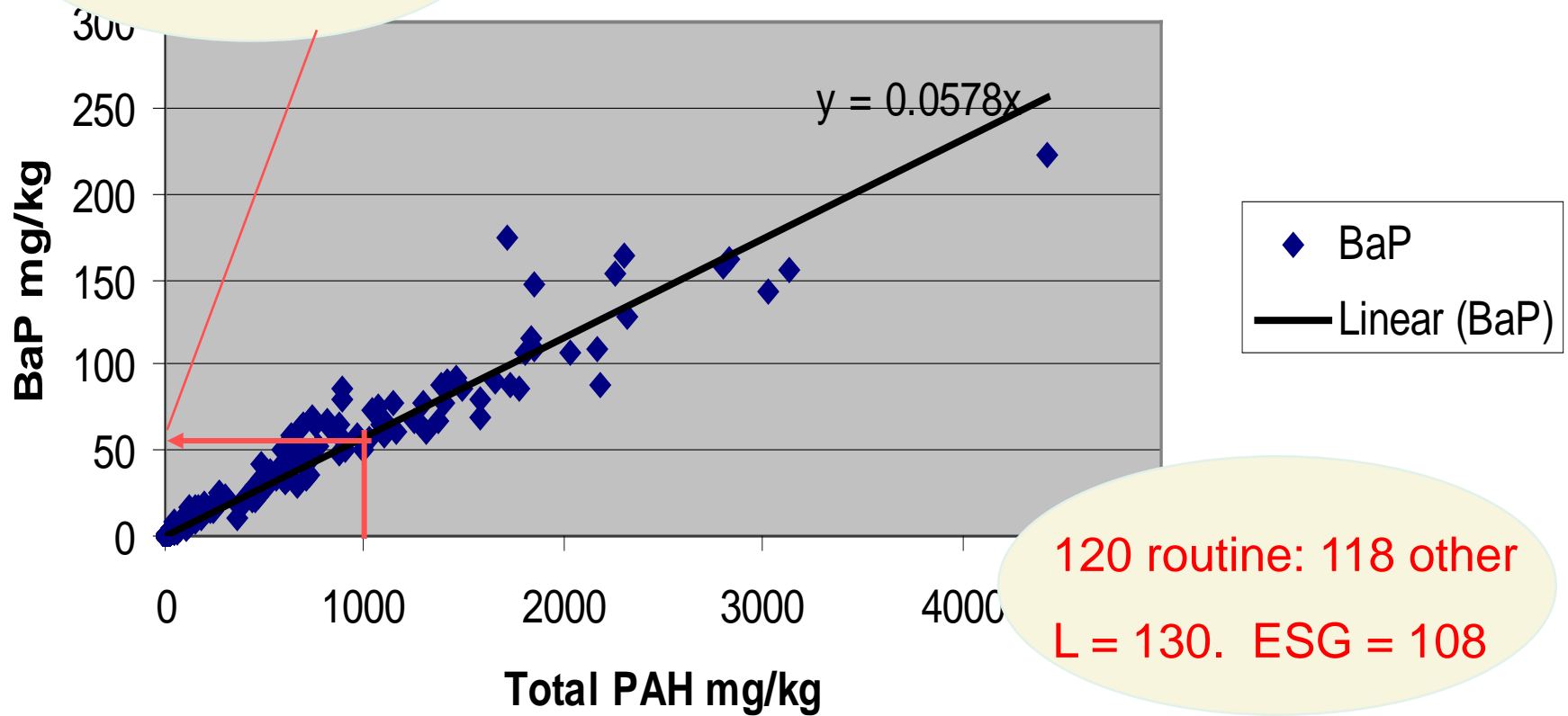
Technical

Operational

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BaP v Total PAH

1000 PAH = 57.8 BaP



120 routine: 118 other
L = 130. ESG = 108

Reclaimed Asphalt – hot mix rules?

- **When Reclaimed Asphalt BaP > 58 mm/Kg = hazardous**
 - Equivalent to Total PAH16 = 1000
 - Taken from the graph – as more data is gathered will move
- We want to ensure that there is no possibility of liberating potentially harmful compounds to atmosphere

SUGGESTED RULES ? when BaP > 50 mg/Kg (to give safety margin)

- **Must only be used as a constituent in a cold bound Product (not unbound)**
- **Must be used in cold bound process**
- Bituminous emulsion, Foamed Asphalt, Hydraulic Bound Material..
- **Do not expose to heat above 65 °C**
 - Safety Factor of 3, as most PAH boiling points around 200C
 - Compounds with boiling point in this range already gone
- **The previous limit of 25mg/Kg taken from SAMARIS is erroneous as it relates to German definitions of hazardous waste concentrations and has nothing to do with health issues when used in hot mix**

Plan B: Recycle it back into unbound mixtures?



Health and Safety

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Adept guidance: Benzo(a)pyrene <100 ppm, Total PAH <1000 ppm and upper limit on phenol leachate

Plan B: Recycle it back into other bound mixtures?

Hydraulically Bound Mixtures (HBM)

?SH? or QH



+



+



Cold Asphalt

SVE or QVE



+



+



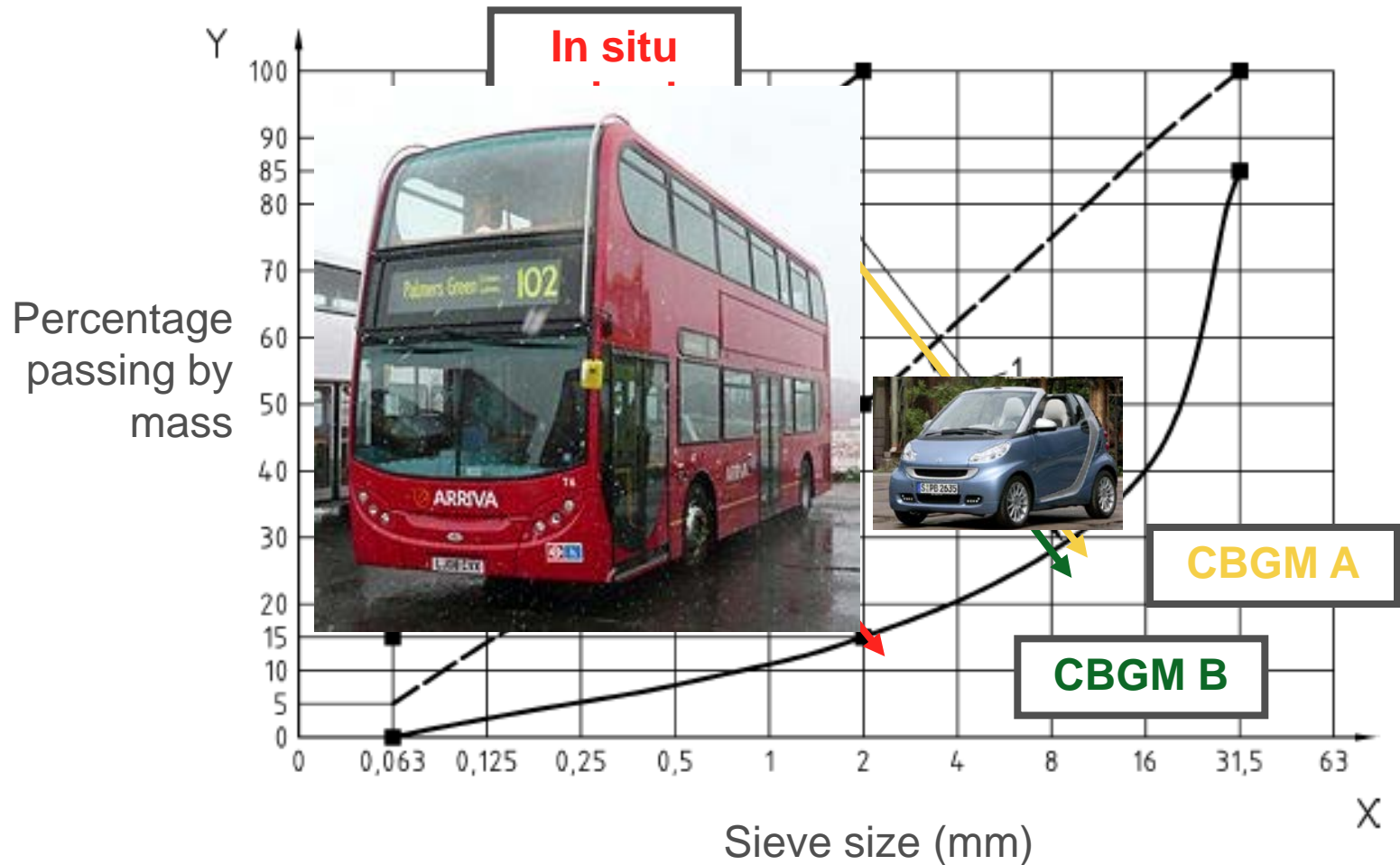
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Foam or emulsion



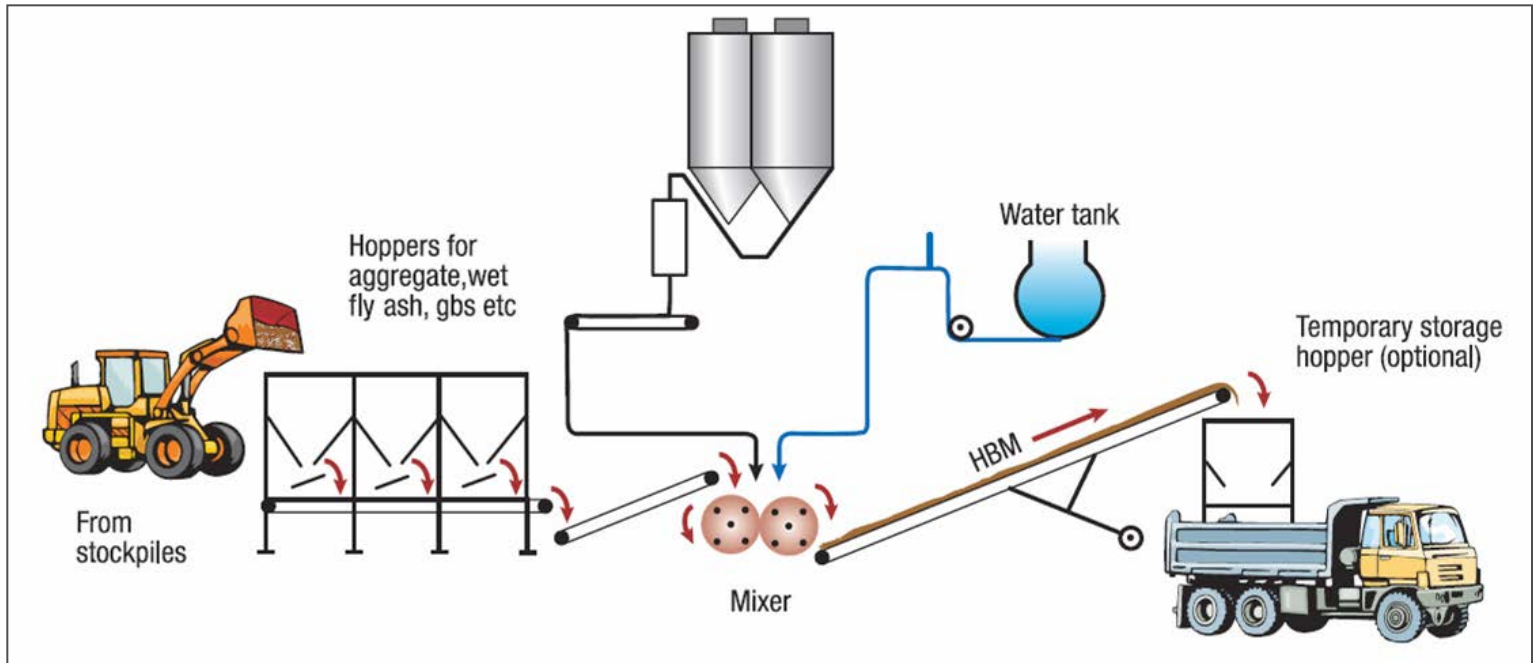
Adept guidance: site specific assessment

Specification based on grading envelope and performance (strength or stiffness)



Adding excessive cement is not the answer!

HBM and Cold asphalt production



Quality controlled production



Aggregate
hopper(s)

Shovel

Silo(s) and
water feed



Continuous mixer

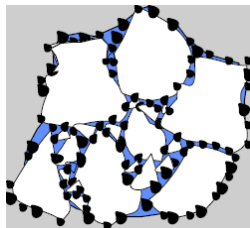
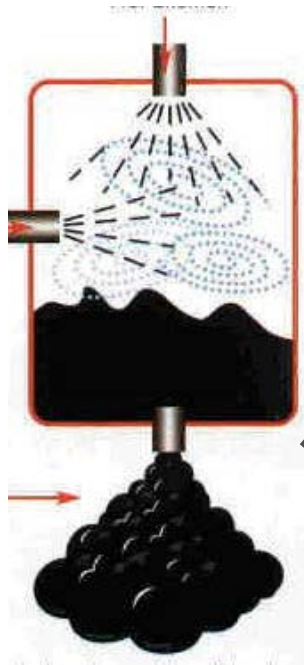
Production plant control





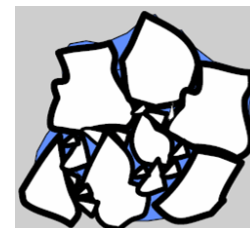
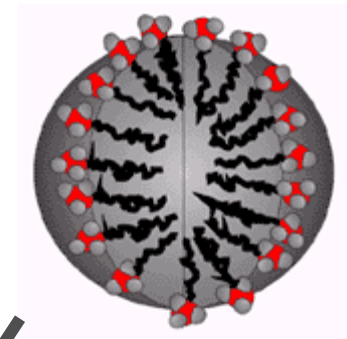
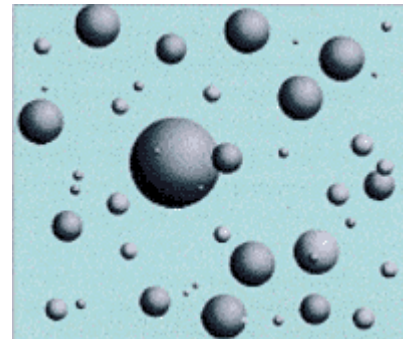
FOAM

Bitumen delivered and stored at temperature Note: not all pen grades foam)



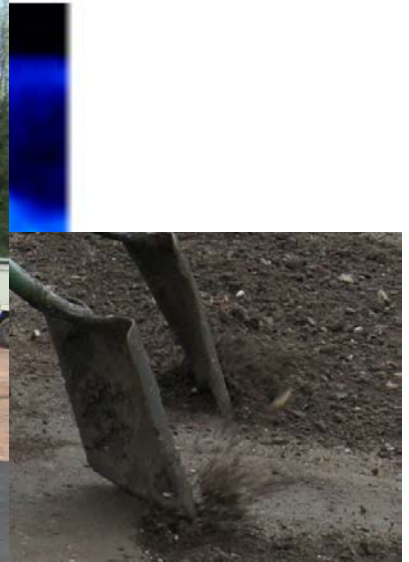
EMULSION

Emulsified bitumen delivered at temperature, but not heated Note: 40% water 60% bitumen





Operational: cold versus hot asphalt?




360.0

Plan B: Recycle it back into cold mixtures?

creating a better place

5 OCT 2012

 Environment Agency

The Company Director or Secretary
Lafarge Aggregates Limited
Granite House
Watermead Business Park
Syston
Leicester
LE7 1PL

Our Ref: EA/EPR/KB3530RW/A001
EAWML105357 / LT16486

Date: 04/10/2012

Dear Sir or Madam,

Issue of standard permit

Permit reference: EA/EPR/KB3530RW/A001 (EAWML105357)
Applicant: Lafarge Aggregates Limited
Standard facility/facilities: SR2010 No11: Mobile plant treatment for soil <75,000 tpd

I enclose a copy of your permit and standard rules list/s.

Please look at the table below and note any of the information or actions that apply to your permit.

if...	then...
you wish to keep your records at a site other than where the activity takes place	you will need to tell your local area officer within 20 working days of receiving this letter. If you do not hear back from them within a further 20 working days please take this to mean we have agreed your record keeping location.
you need to submit quarterly waste returns on waste movements	you can get the forms you need from our website http://www.environment-agency.gov.uk/business/topics/waste/32176.aspx If you do not have web access phone our Customer Contact Centre
you need to submit other returns	send these to your area office. Speak to your area officer to check local arrangements.
your permit includes an installation	we've enclosed the pollution inventory letter, notice and fact sheet

You will also need to look at the document 'How to comply with your environmental permit' as this will help you understand how to meet the conditions of the permit. You can find this on our website at <http://publications.environment-agency.gov.uk/PDF/GEHO0411BTSP-E-E.pdf>. If you do not have internet access please telephone our Customer Contact Centre. If you have any questions about this permit please phone our Customer Contact Centre on 03708 506 506. They will put you in touch with a local area officer.

Yours faithfully

Emma Ivanko
Permitting Support Advisor

Health and Safety

Waste Management

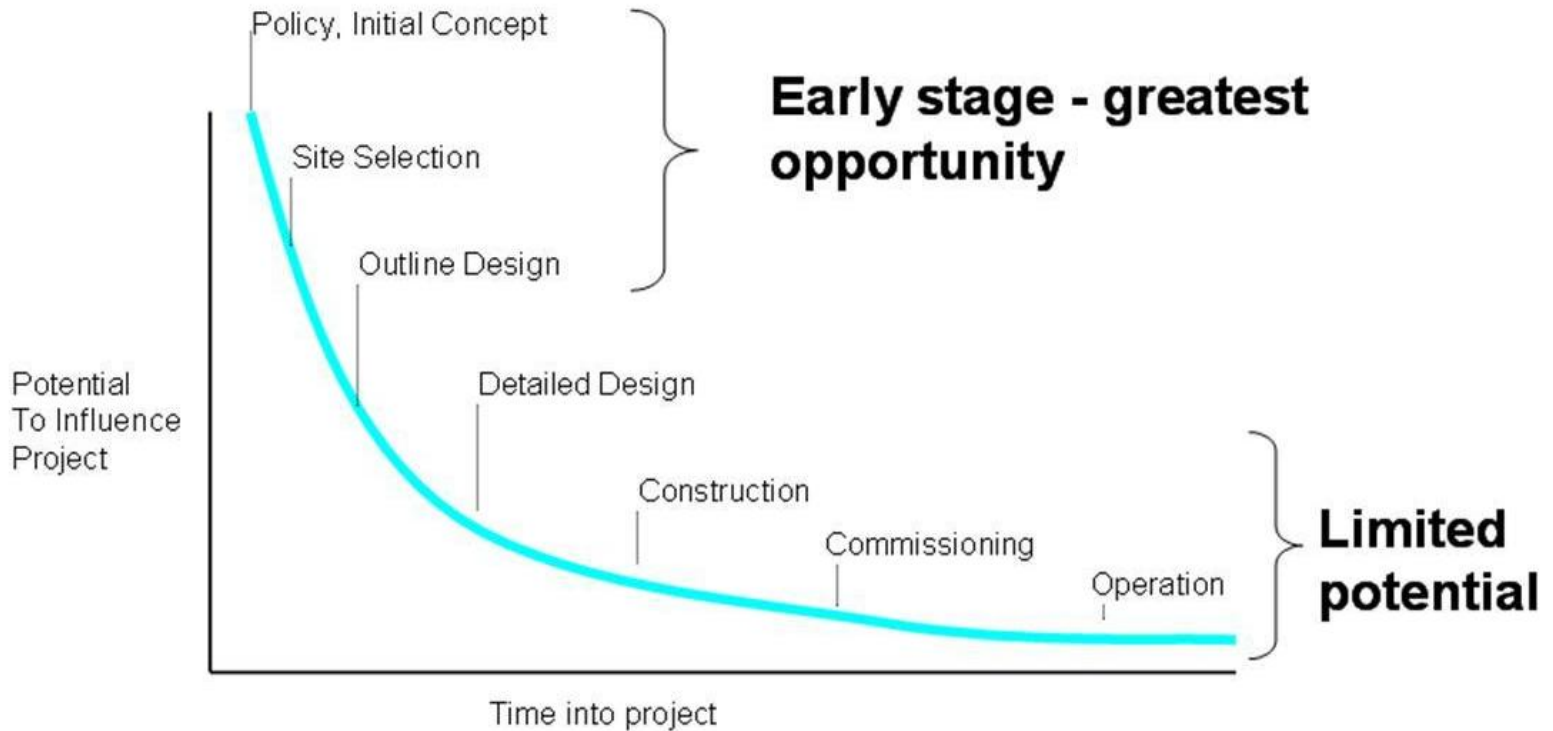
Planning

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Summary = simple solutions*



*** early involvement = add greatest value to client**

Thank you for your attention

Dr Paul Edwards