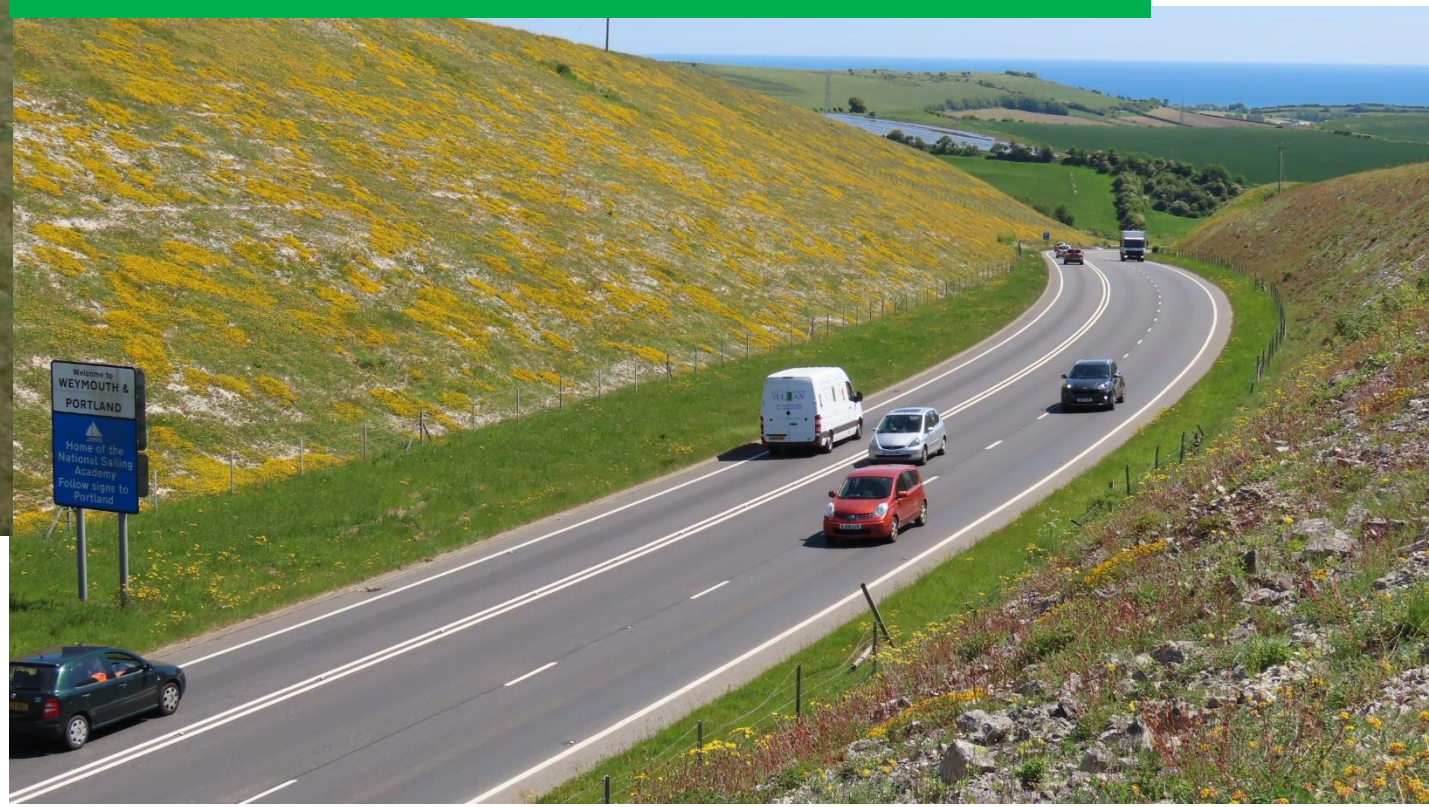
Verge management: how councils can save money and increase wildlife

Standard verge design

Verges on Weymouth Relief Road, Dorset



Dr Phil Sterling, FCIEEM

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Typical urban grassland

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Here's why we need to do better

- Most urban grasslands are poor in wildflowers & poor for pollinators
- Urban grasslands - we're not making best use of what we've got to help our wildlife & climate crises
- Urban greenspace (40.8% of all urban land) comprises 4.2% road verge, 7.1% parks & open spaces, 29.5% residential gardens[1]
- Wildflowers and insects bring joy into our lives, offer public health benefits[2] and other Ecosystem Services
- Current system: we are locked into very regular cyclical maintenance – rural verges 2–3x / yr, urban open spaces and verges 5–22x / yr
- Are there smarter solutions to cutting grass that can deliver more wildlife, at a cheaper price and more C-friendly, leave grasslands looking tidy, and engage local communities?

[1] https://doi.org/10.1016/j.landurbplan.2021.104159
[2] https://pubmed.ncbi.nlm.nih.gov/30007287/; https://valuing-nature.net/news/defra-evidence-statement-links-between-natural-environments-and-human-health


In the grassland ecosystem soil fertility is a powerful driver of grass growth

Thick topsoil / high fertility
– coarse grasses dominate
– few gaps for germination

Thin topsoil / low fertility
– fine grasses & herbs
– plenty gaps for germination

Photos of same verge taken on same Apr day, 100m apart

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Our most biodiverse grasslands in Europe are on soils poorest in Nitrogen

Limestone grasslands

- The plants of conservation value live in a stressed environment
- They are adapted to thrive in soils low in Nitrogen
- To increase grassland biodiversity we must increase environmental stress:
  - ➢ Create grasslands using low N soils
  - ➢ Manage our existing grasslands to reduce, not increase, N

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Financial consequences of low fertility

- We should spend more than we have to on cutting amenity grass
- When grass grows on low Nitrogen soils, it doesn't grow as tall, so
- By controlling the amount grass grows in the first place, we will have less to cut
- If we have less to cut, mowing should cost us less (less fuel / less Carbon), and we can spend more time on other jobs
- Lower cost maintenance and higher biodiversity on amenity grasslands should align, but does this work in practice?


Incorporating low fertility verges into scheme design: Weymouth Relief Road, Dorset (2009 – 2011)

Low fertility verges designed in, on 7 ha
15mm topsoil or subsoil-only specification
Wildflower seed – including pioneer species

SEED MIX
Crested Dog's-tail
Red Fescue
Sheep's Fescue
Yarrow
Greater Knapweed
Common Mouse-ear
Rough Hawkbit
Oxeye Daisy
Bird's-foot trefoil
Wild Marjoram
Cowslip
Yellow Rattle
Salad Burnet
Black Knapweed
Wild Carrot
Lady's Bedstraw
Kidney Vetch
Horseshoe Vetch
Bee Orchid
Pyramidal Orchid
Autumn Lady's Tresses
Viper's Bugloss
Devil's-bit Scabious
Small Scabious
Field Scabious

Kidney Vetch

Small Blue

2013

2019

141 species plant (2019)

30 species butterfly

2020


Slow lorries
for 1 mile
2022
2021

M27 Porchester – constructed mid-1980s

No verge maintenance since!

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Press release 2nd Dec 2020: Breaking new ground with eco drive to bring the country's verges to life

Highways England is driving a new initiative which will have wide-reaching benefits for the environment and biodiversity – and the answer lies in the soil.

Major Project Instruction on Low Nutrient Grasslands (MPI-85-102020)

national highways

A2 Bean and Ebbsfleet

junction improvements newsletter

October 2021

Wild Meadow Planting

To help to create wild flower meadows, we will be planting native wild flower seed mixes onto areas of land that currently have nutrient poor soil. Poppy seeds will be included within the seed mix.

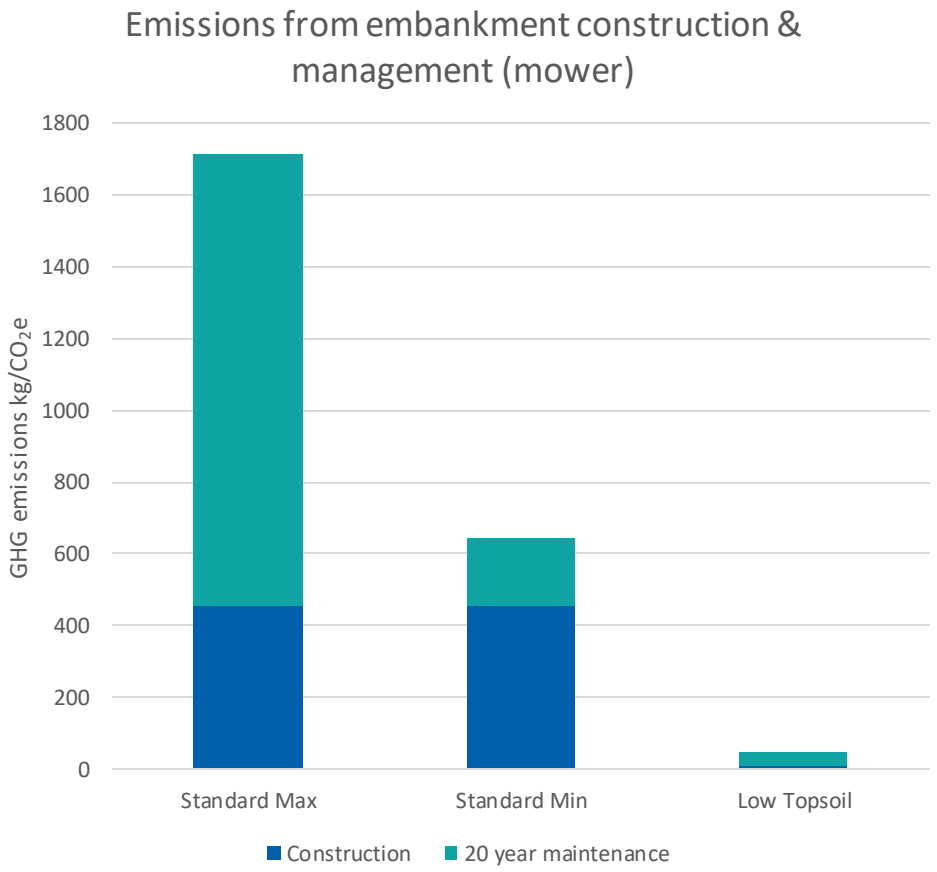
These meadows will become food sources for various insects, birds, bees and butterflies, in particular rare species. This planting has been specially designed in consultation with the Butterfly Conservation Trust and other industry leading experts.

The ground may appear bare for the first initial years, while the wild flowers establish and grow. We have included a picture of what the meadows will look like initially and how they're likely to look after five years.

GHG emission reduction on Weymouth Relief Road

Use of a low top soil prescription:

- Saved £270,000 in construction costs through reduced fuel / C required to move soil
- Reduces the fuel / C requirement forever on routine maintenance – fewer mowing operations
- Total emissions reduced by 97%
- This is a ‘no-brainer’



Adapted from work by Dr Sarah Wynn, ADAS, and reproduced with permission

Can we increase the wildlife value of existing amenity grasslands?

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Do either of these practices help?

Just stop mowing …

Plant mixes of annuals …

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Perennials – vs – Annuals

45 species

Seasonal flowering
Favour generalist & specialist pollinators
Nectar & pollen, foodplants, shelter

Foodplant for UK Lepidoptera

Perennials vs Annuals

0 species

Extended flowering period
Favour generalist pollinators
Nectar & pollen

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Change mowing system to cut-and-collect on all amenity grasslands

- Grass grows less because we remove nutrients by taking away living veg
- Less grass to cut, saves money
- Wildflowers increase and flower more
- Carbon savings / Carbon storage
- Improved safety – visibility and for operatives
- Mowers c.60% more expensive but return on investment in a few years

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The process: reduce fertility first and fast through repeated cut-and-collect

Littlemoor Road, Weymouth

3 cut-and-collect in 2017 (Apr, July, Sept). No cuts yet in 2018 - photo mid-May

After 5 yrs cut-and-collect the Blandford Bypass visibility splays are a county wildlife site full of flowers in summer. They used to be cut 3x/yr, now only once

Let your community know what's happening


Dorset County Council
Conservation verge trials
www.dorsetforyou.com/verges

2021

Disposal of arisings – where and how much time / resource does it take?

Lincolnshire Verge Harvesting trial for biogas generation

North Dorset urban verge cutting programme

Year	Urban mowing cycle / year	Start / finish dates	Team size	Operations	Verge cutting days	Person-days
2017[1]	5 or 6	15 Mar - 16 Oct	3	Cut, strim, blow	89[3]	268
2021[2]	2	26 May - 19 Oct	2	C&C, strim	42[4]	84

68% saving on staff resources

Fuel and other savings not included

[1] Final year of cut-and-drop mowing

[2] Cut-and-collect started 2018, 4 years now completed

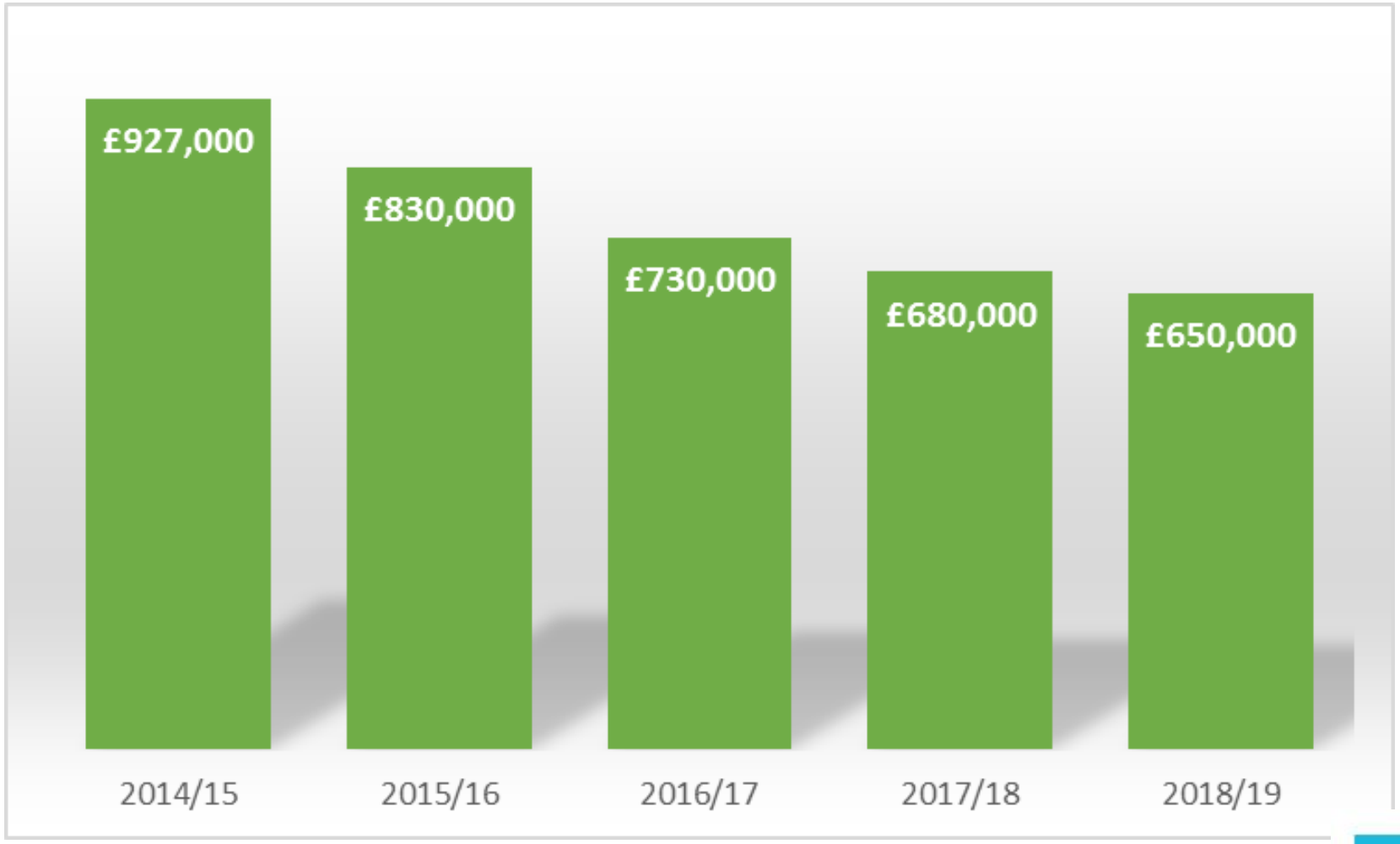
[3] 149 working days, assumes 3 days/wk mowing verges (2 days mowing other sites, breakdowns, wet weather, annual leave etc.)

[4] Precise data on c&c of verges (c&c only on drier days, other operations undertaken when wet, breakdowns etc.)

Source: Giles Nicholson, Greenspace Manager, Place Services, Dorset Council

Dorset Council

Highway verge management budget in Dorset since 2014

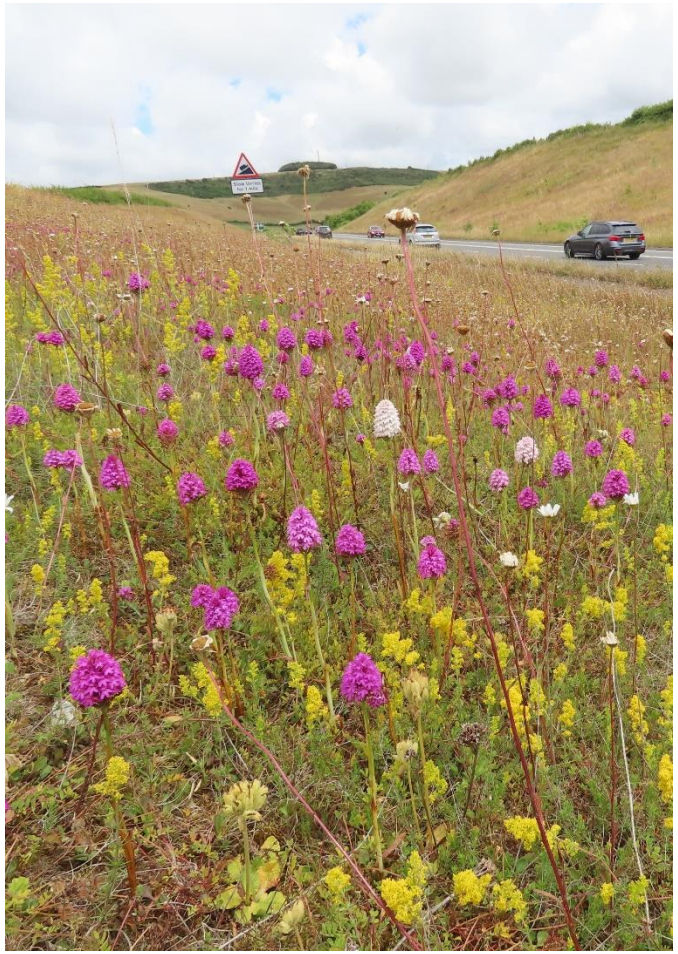


Dorset Council budget for verges in 2021/22 was £501,000

Dorset Council

Conclusions

- **By understanding amenity grassland as an ecosystem we can change the way we do the 'day job' – especially on road verges, also parks & open spaces, gardens, anywhere there is mown grassland!**
  - ✓ **In grasslands low fertility is the key to increasing biodiversity, through design and routine maintenance**
  - ✓ **Cheaper to look after, contribute to C-reduction by using less fuel (and v probably increase C- sequestration in soil)**
  - ✓ **Wildflowers and pollinators bring joy to our everyday lives – why wouldn't we want to do that?**



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