4th July 2023

Grass & grassland management



Parks for London

London Parks Benchmarking Group



London’s Urban Grassland: opportunities for nature’s recovery

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1/6th butterfly abundance since 1976

1/4 moth abundance since 1970

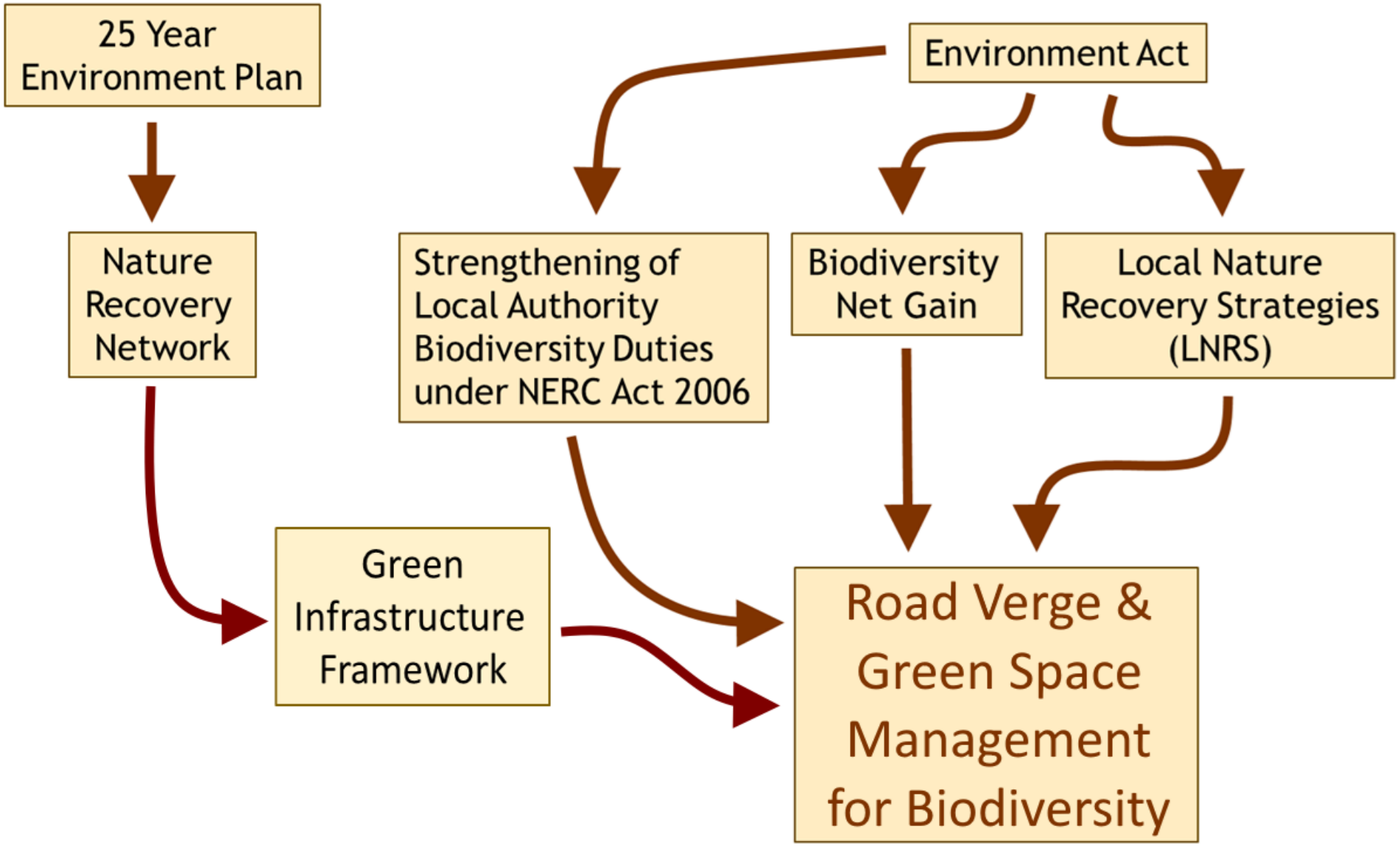
Up to 1 species / county / year

Rate accelerating

97% wildflower meadows lost since 1930s

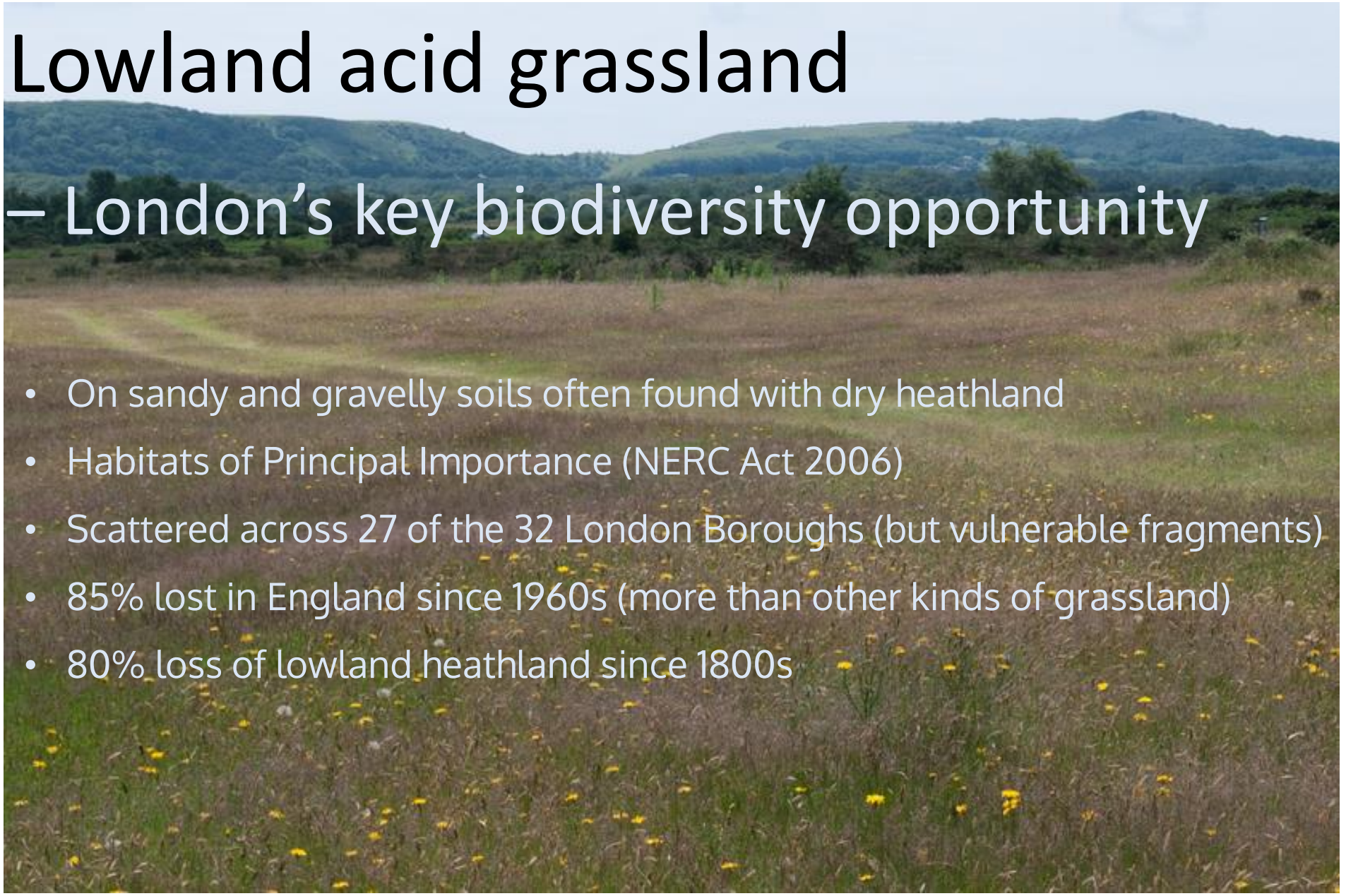
Plantlife

Policy / Statutory Drivers



Lowland acid grassland

– London's key biodiversity opportunity



- On sandy and gravelly soils often found with dry heathland
- Habitats of Principal Importance (NERC Act 2006)
- Scattered across 27 of the 32 London Boroughs (but vulnerable fragments)
- 85% lost in England since 1960s (more than other kinds of grassland)
- 80% loss of lowland heathland since 1800s

Tree planting vs - grassland / heathland



- C capture in grassland can be achieved on larger scales, more quickly, more biodiversity
- Heathland stores more C than acid grassland – very vulnerable to fire risk
- Carbon store in timber depends upon environmental fate
- In grassland C capture starts within two years and continues for up to 100 years
- Woodland accumulates more C but takes 10-30 years to reach positive C budget
- Tree planting on heathlands or organic soils results in net carbon losses

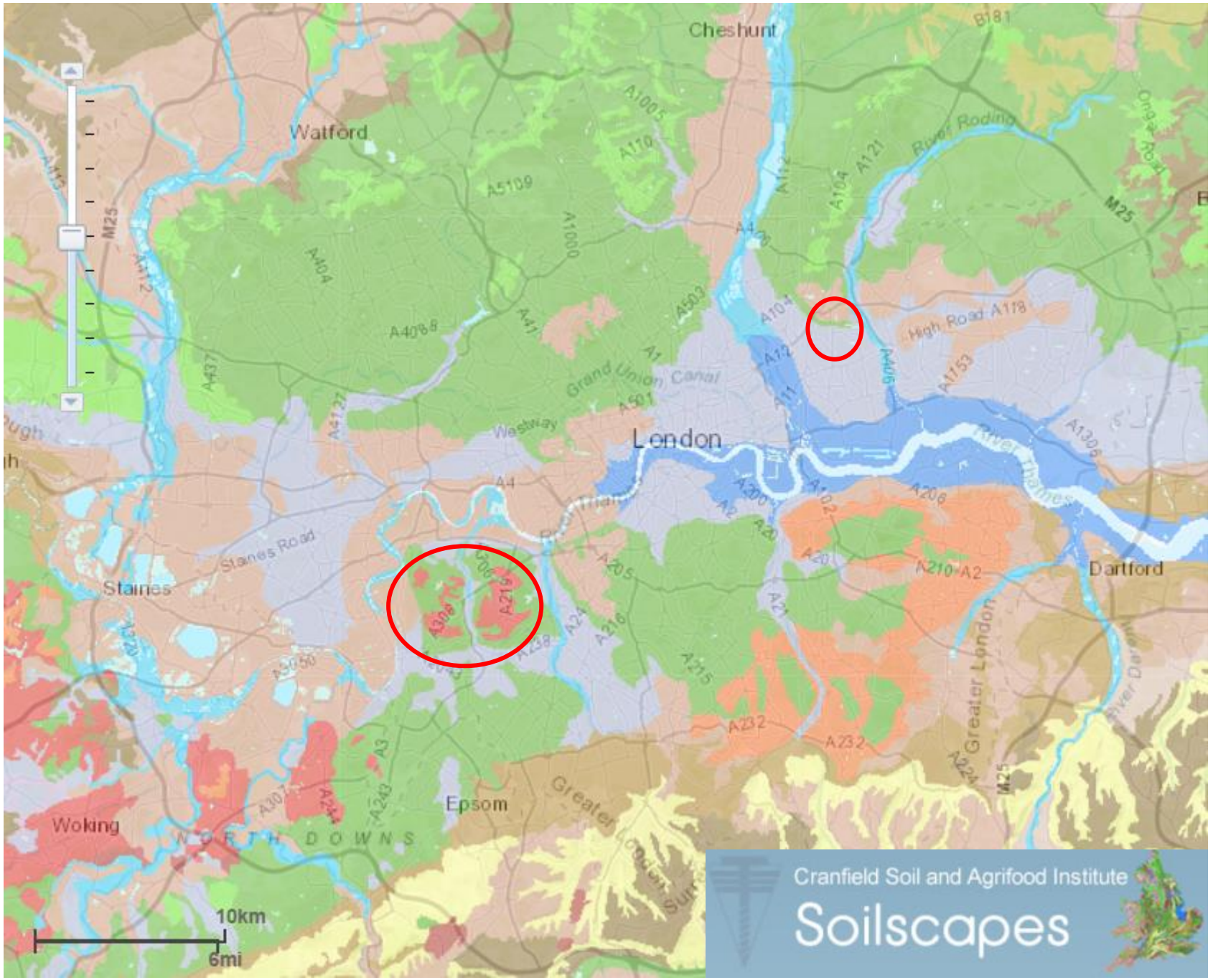
CIEEM










Cheshunt
Watford
London
Staines
Staines Road
Dartford
Epsom
Woking
NORTH DOWNS
Greater London
Grand Union Canal
River Thames
High Road A118
Westway
10km
6mi
Cranfield Soil and Agrifood Institute
Soilscapes

Only 5 remaining large sites for acid grassland in London



Yellow meadow ants

- ecosystem engineers







Urban grazing in London



Wanstead Park: English Longhorns

Urban grazing in London



Resources to learn more about conservation grazing:

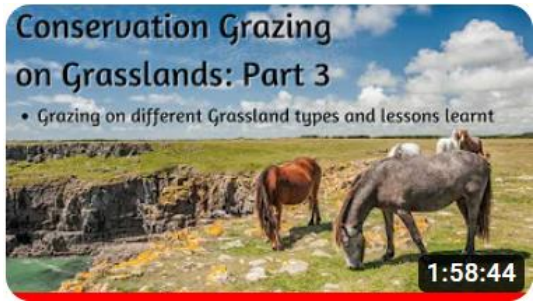
Grazing Animals Project GAP

Local grazing schemes: A best practice guide rbst.org.uk

Plantlife on YouTube





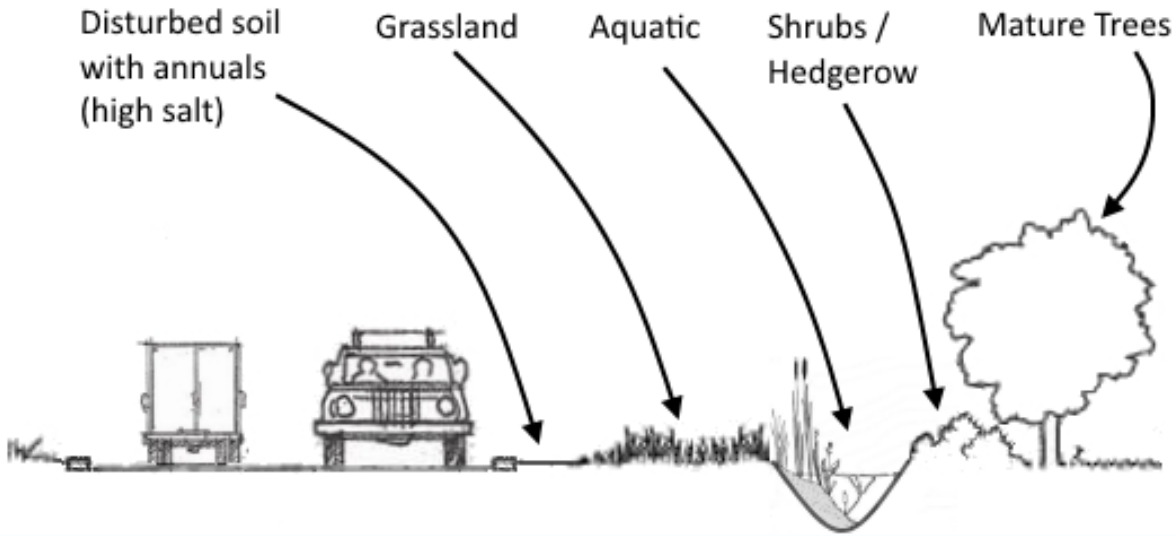


NATURAL ENGLAND

Lowland Grassland Management Handbook: Chapter 5
(technical, comprehensive – for ecologists)

publications.naturalengland.org.uk/publication/35034

Road verge habitats



Verge habitat	Number of species	% of all species
Grassy verges	579	36.3
Disturbed verges	86	5.4
Wooded verges	187	11.7
Salted verges	17	1.1
Total verge species	**724**	**45.4**
Ditches	51	3.6
Hedgerows	290	18.2
Total roadside species	**809**	**50.7**

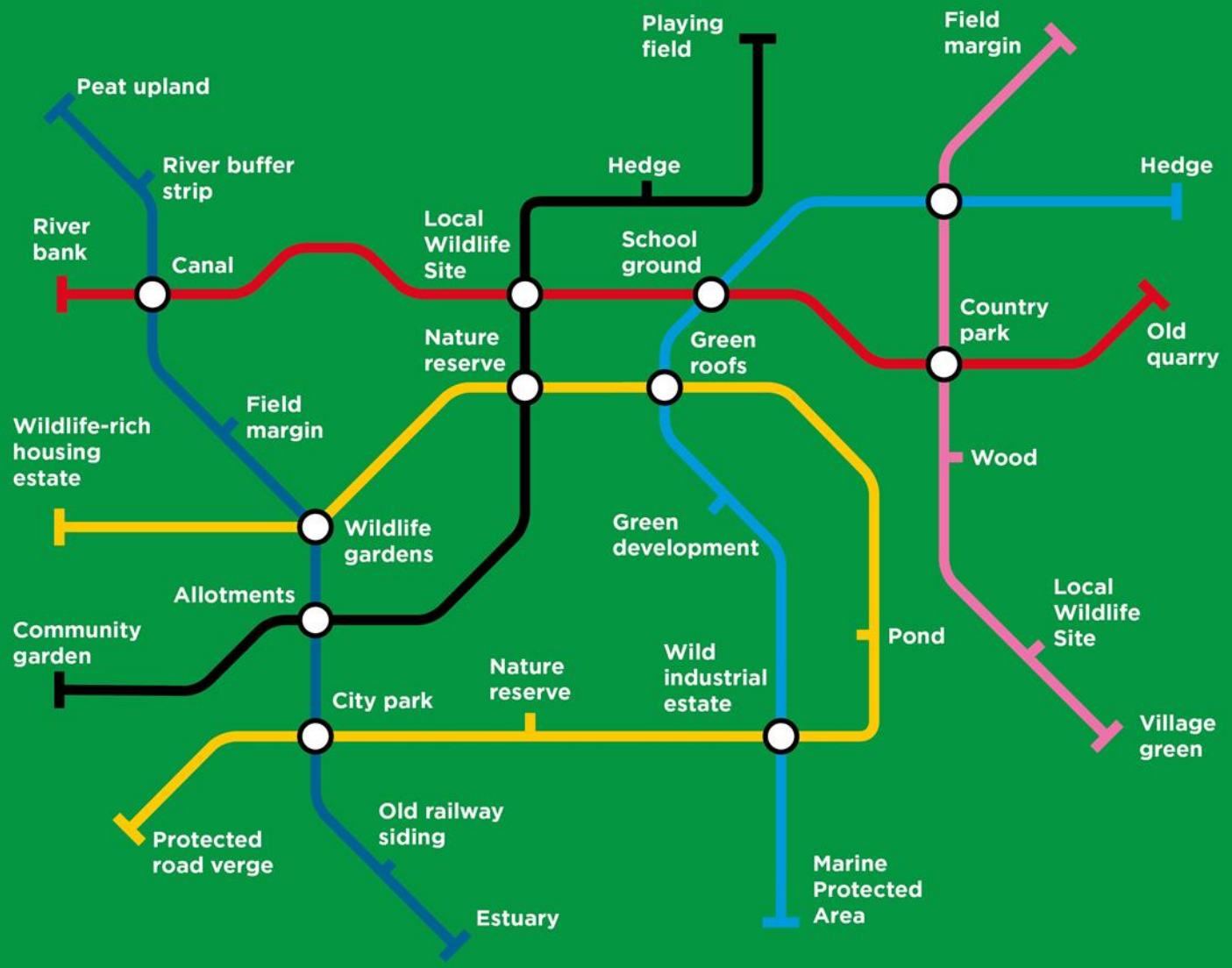
Value of road verges and Green spaces for biodiversity



Sanctuary

- Over 700 species of wildflowers grow on verges
- Nearly 45% of our total plant diversity
- 87 species threatened with extinction

Connectivity



Grassland



Timing and frequency of grassland management



Wildlife-friendly grassland still requires cutting

Management option		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
One cut									full cut				
Two cuts	Summer and autumn cutting								partial cut		full cut		
	Late winter and autumn cutting		full cut							full cut			
	Dry verges (short vegetation)	regular cuts								regular cuts			
	Species-rich verges with mown edge		1m strip							full cut			

Remove cuttings where possible

Plantlife

meadows.plantlife.org.uk

How to make a meadow
with native wild flowers

≤5 species of wildflower



© Lucia Chmurova

CREATE
a meadow

>5 species of wildflower



© Lucia Chmurova

ENHANCE
a meadow

Principal pressures on grassland wildlife

Cuts too frequent or too infrequent
Too many cuts: diversity lost
No cuts: tussocks → scrub → trees
>2 cuts per year / no cuts



Smothering mulch
Only vigorous minority of species survive
No collection of cuttings

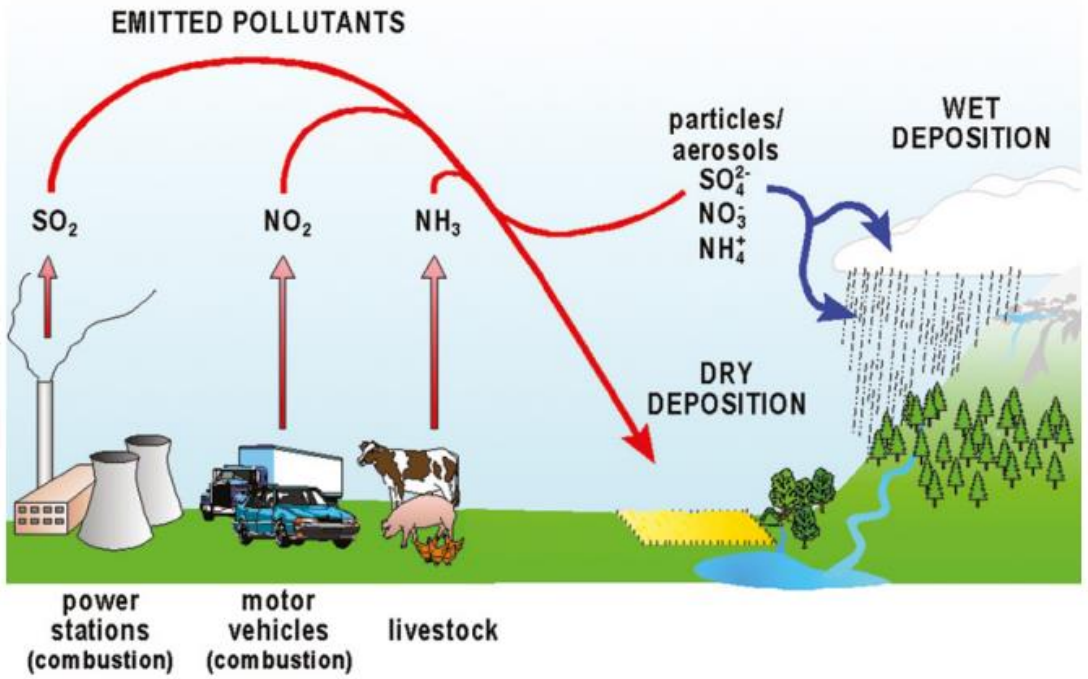


Accumulating fertility
Tall growth of nettles, hogweed, thistles
No collection of cuttings

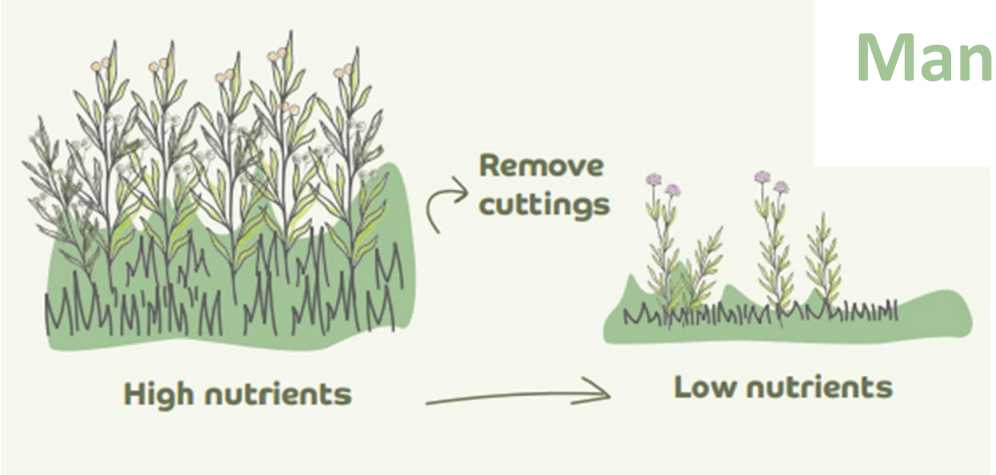


CS2000 (Lowland England, Scotland and Wales)

The fertility problem







Manage down the maintenance

Deplete nutrients
through biomass removal

Quicker results (2-3 years)
on lighter soils



Different 'flavours' of grassland

Remove cuttings where possible

Dorset cut-and-collect case study

– delivering savings, boosting biodiversity

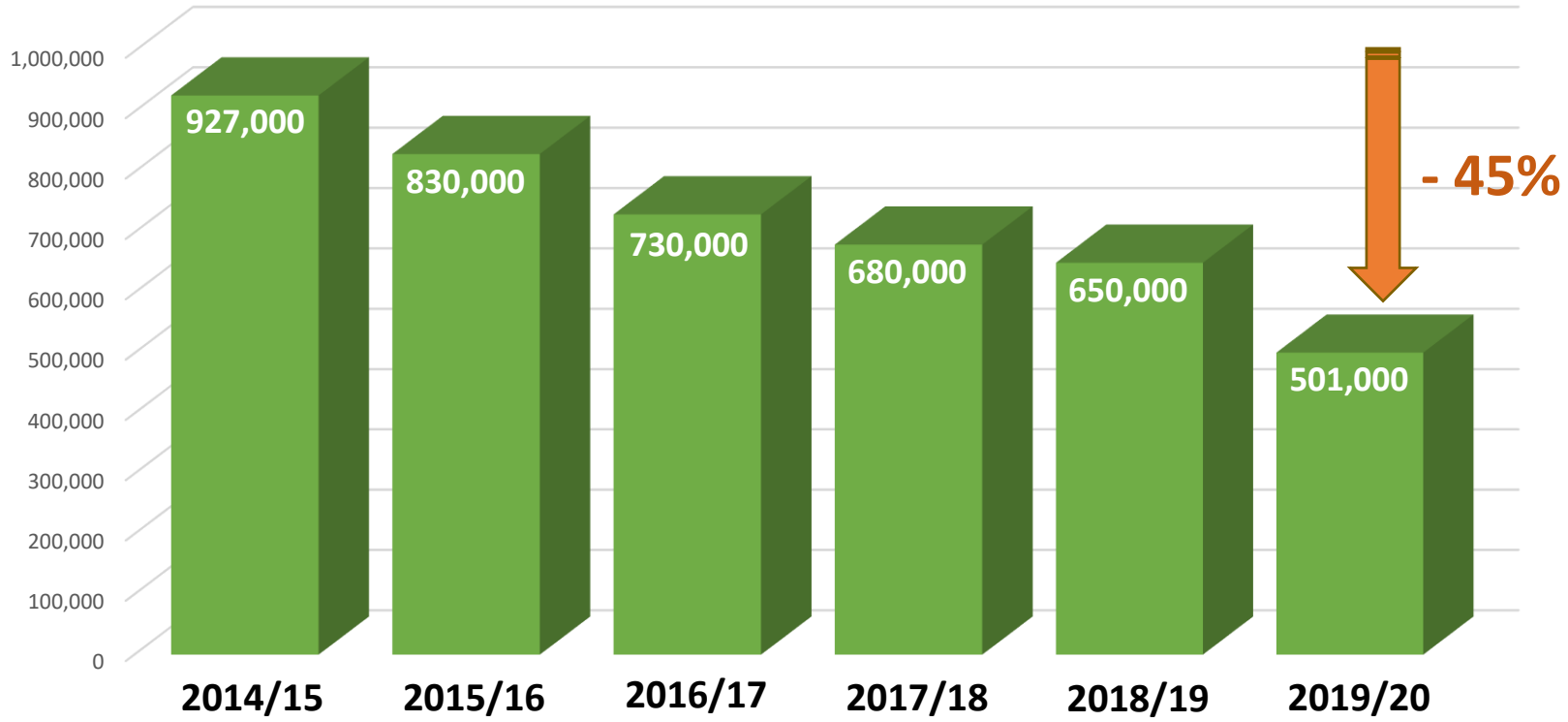
Dorset Council



- Significantly reduced fertility for grassland – safer visibility and pull-over
- Returning soil to naturally lower fertility level – better for wildflower diversity
- Reduced cutting frequency by 50% (within 2-3 years)
- 5-year payback on investment in new cut-and-collect machinery

Dorset Council

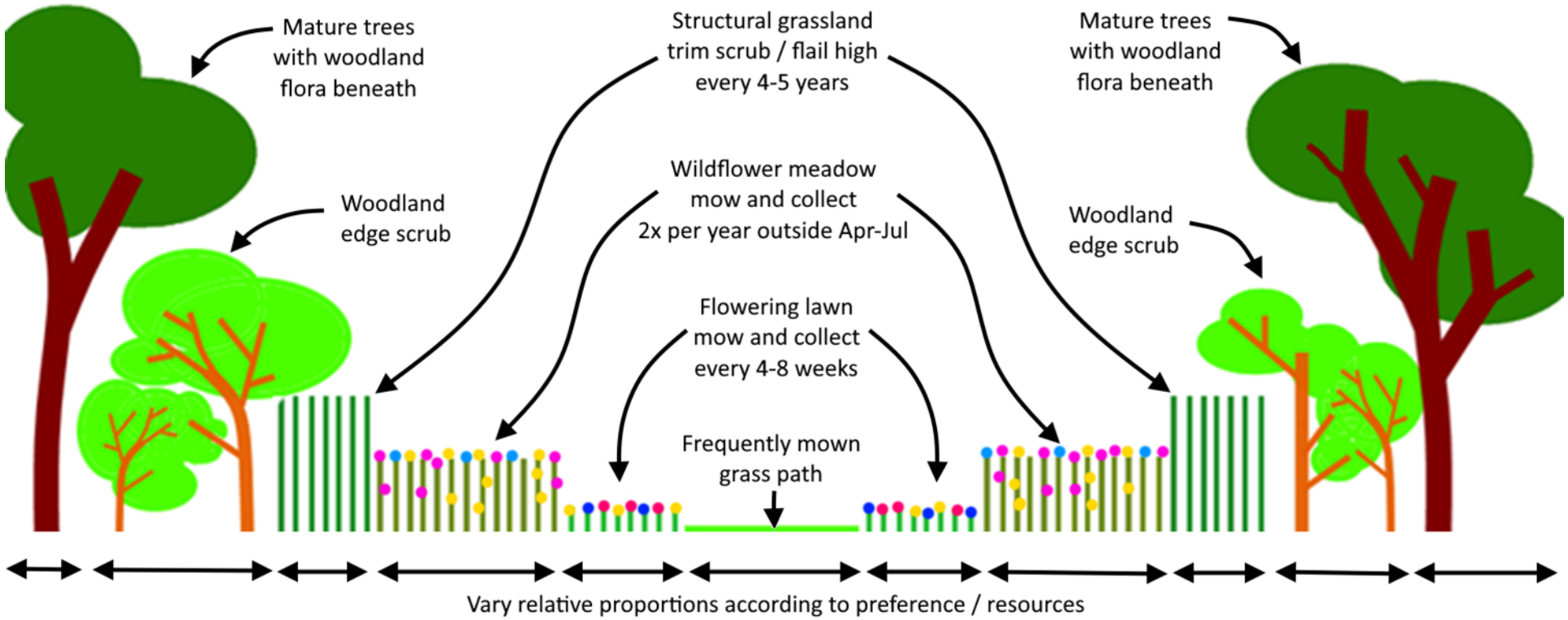
Dorset Council verges budget



45% cost saving for verge management within **5 years**

High to low maintenance zones

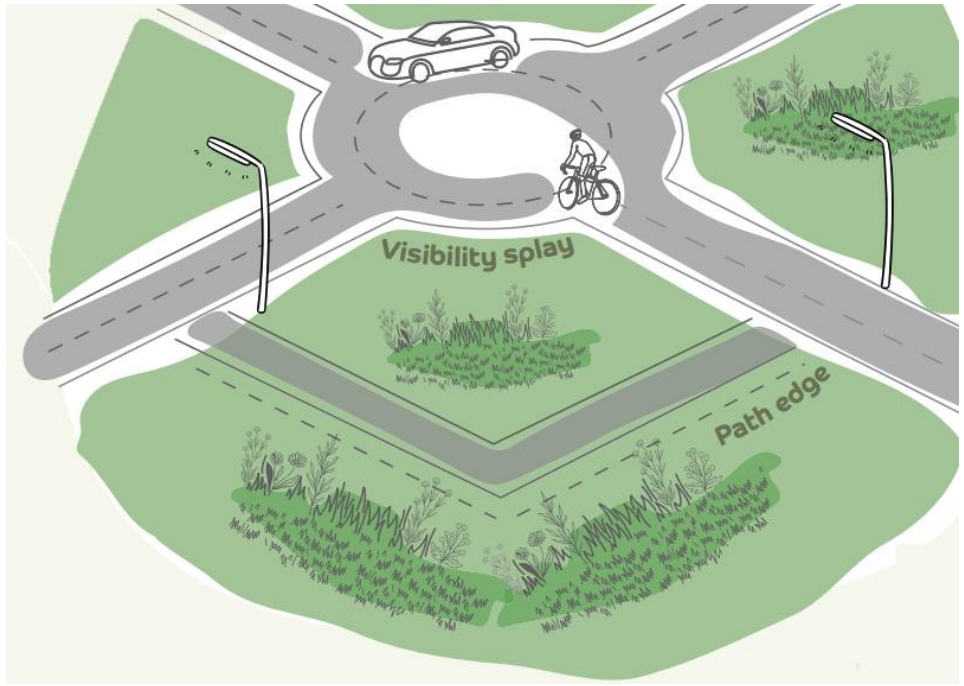
Balance proportions to suit your requirements, time and resources



#NoMowMay

Management of green space in zones

Safety



Access

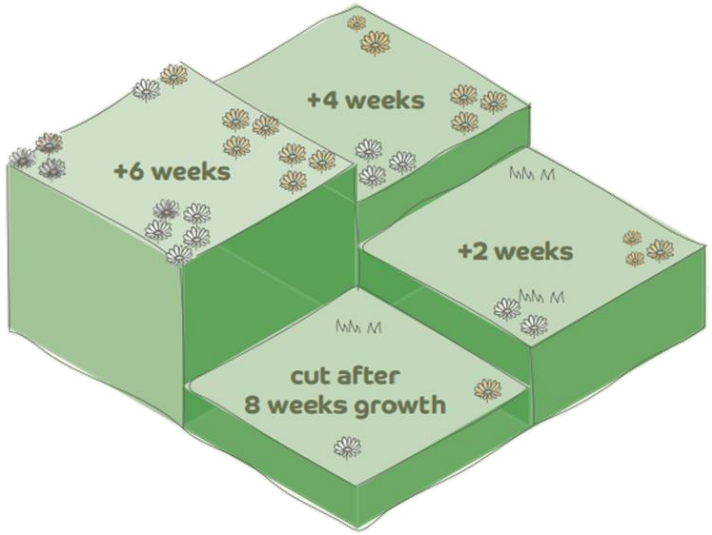


Spreading the effort over the year

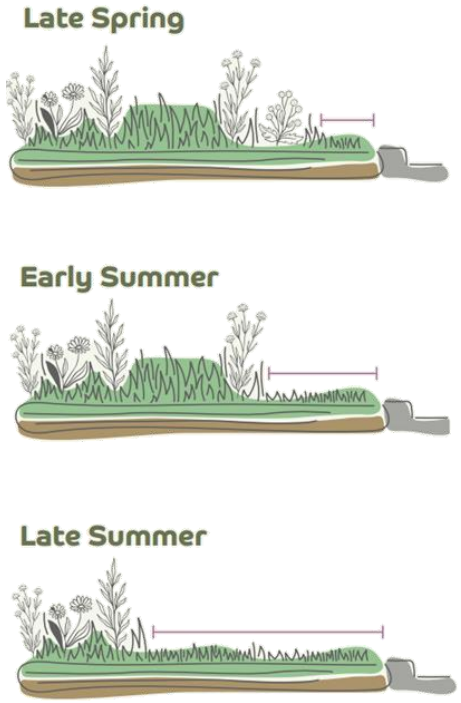
GRID GWYRDD GWENT
GWENT GREEN GRID

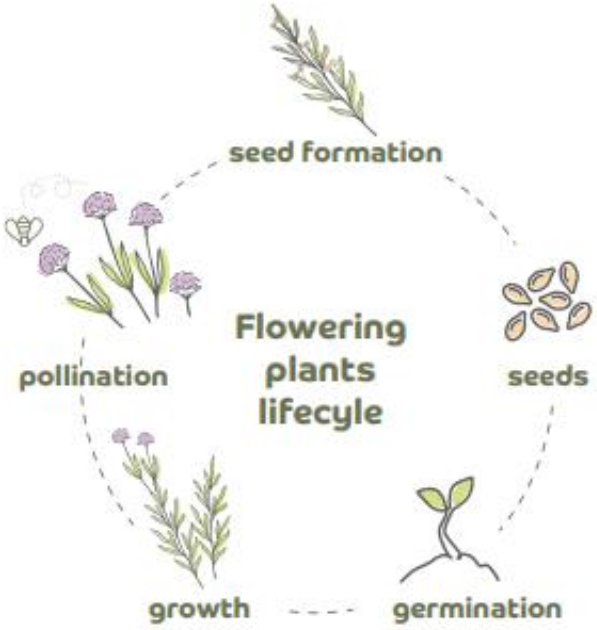
Nature isn't neat
Code of Action
Handbook

Rotational management



Incremental management





Perennials versus annuals



Perennial meadows vs annuals

- **20x more nectar**
- **6x more pollen**
- **Produce resources earlier**

Hicks et al. (2016)



Native versus non-native





- **Early season nectar and pollen** supplied almost entirely by **native plants**
- Greater abundance of total **pollinators** visited **native and near-native plants**

RHS – Salisbury et al. (2015)



Wildflowers versus cultivars



Artificially selected plants can have **negative impacts** on native genetic diversity and have less ecological value

Source locally, organically, UK provenance, locally occurring





Single axle machines:

BCS brielmaier aebi schmidt group





Cutter Bar attachment for long-stem cut



More robust flail head for short strand cut – can’t be baled but can still be power raked to side to back verge



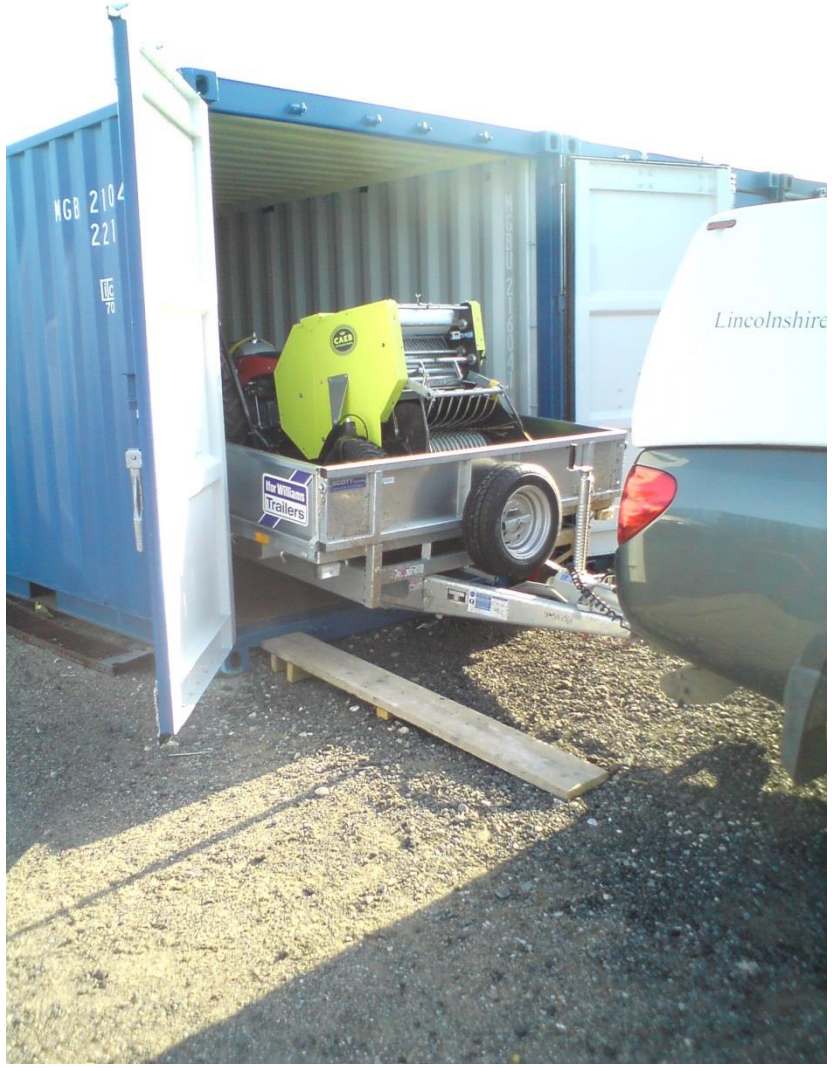
MOLON



Major labour-saver
A belt-driven, side-delivery power rake

Equipment storage

Possible to transport single axle set on a 14ft flatbed trailer and store in 8x20ft insulated marine shipping container





Single axle and compact tractor work rates



Single axle machine

0.15ha/man day



Compact tractor

0.3ha /man day

Pricing: Pedestrian and compact tractors

RRPs (£) excl. VAT (2018)

	Single Axle	Compact Tractor
Power Unit	6,500-16,000	9,500
Flail	1,500-5,200	3,500
Cutter bar	1,500-4,600	
Belt rake	1,500	1,200
Drum mower		1,800
Flail collector		2,500
Mini baler	7,000	5,000
Totals	**9,500 - 30,000**	**12,500 - 20,000**

A review of cut-and-collect machinery for urban spaces



Partneriaeth **Bioamrywiaeth** Cymru
Wales **Biodiversity** Partnership

Machinery for managing roadside verges and wildflower grasslands - https://www.youtube.com/watch?v=8IKDgkSdL5A

Manufacturer	Model	Purchase Cost (£)	Capacity (litres)	Working width (m)	Cutter Height	High lift discharge	Notes
Amazone	Profihopper 1250	50,000	1,000	1.25	very adjustable	Yes (2.1m)	Self-powered, auger fed to reduce blockages, rear wheel steer, 4WD
Amazone	Profihopper 1500	50,000	1,600	1.5	very adjustable	Yes (2.5m)	Self-powered, 4WD, working speed up to 10km/hr
Amazone	GHS Groundskeeper Smart Cut	25,000	3,500	2.1		Yes (2.3m)	Trailed by tractor
Rytec	C2200 CHS Super	15,000	2,600	2.2	0.20cm	Yes	Trailed by tractor, heavy duty mounted flailmower / collector, floating linkage and skids for rough ground
Rytec	C1600CH Super Cut and Collector Flail	17,000	1,900	1.6m	0-20cm	Yes	Trailed by tractor, Min tractor bhp 55
Grillo	FD2200 (TS)	50,000	1,400	1.6	2-12cm	Yes (2.5m)	Self-powered, 4WD
Grillo	FD 900	32,000	750	1.3	2-10cm	Yes (1.95)	Self-powered, 4WD
Grillo	FD 13.09	38,000	900	1.32	2.5-10cm	Yes (2m)	Self-powered, optional 155cm deck
Standard tractor for urban mowing		20,000					

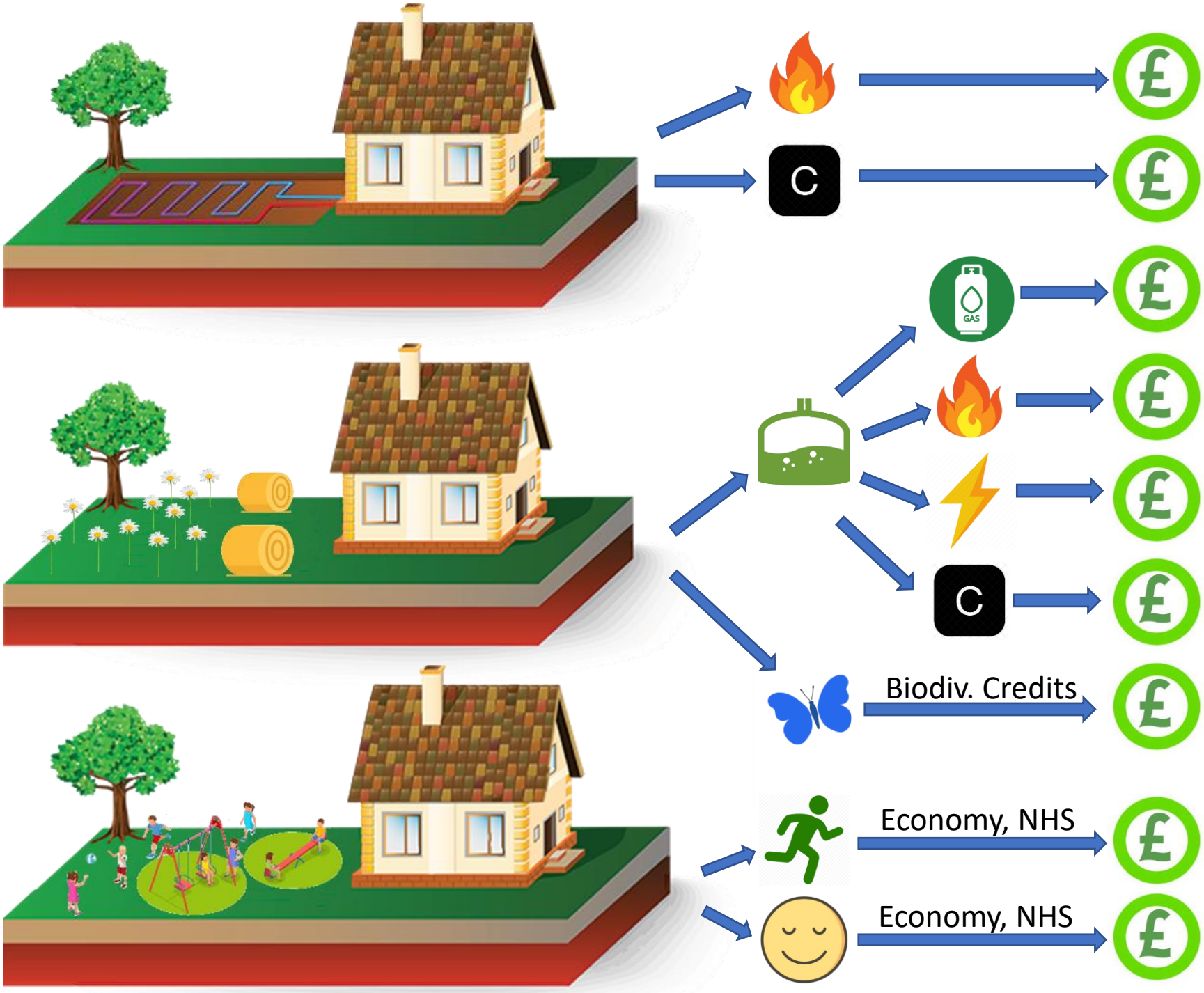
Could urban green spaces earn their keep?

GreenSpace Scotland:

- **ParkPower** project report (2020)
- **Green Heat in Greenspaces** (GHiGs) (2021)

Ground Source Heat Pumps in urban green space to de-carbonise the energy system with heat grids where needed most (80% of demand from Scotland's towns and cities)

'Benefits stacking': Increasing the range and net value of public benefits from existing public assets which address our current climate and biodiversity crises


C
GAS
C
Biodiv. Credits
Economy, NHS
Economy, NHS

Environment Act requires separation of putrescible waste from landfill by rolling out **separate household food waste collection** nationally by 2023

Adding grass cuttings to food waste regulates and improves biomethane yield from AD

Chakraborty et al 2016

GOV.UK

Defra in the media

Organisations: Department for Environment, Food & Rural Affairs

Household food waste to be collected separately by 2023

Defra Press Office, 10 February 2020 - Weekly stories

Household food waste to be collected separately by 2023




QUBE
renewables
bioQUBE
dryQUBE


aardvark
environment matters



Thank you.

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Visit our Resources Hub

https://parksforlondon.org.uk/resource/managing-grass



Parks for London

London Parks Benchmarking Group