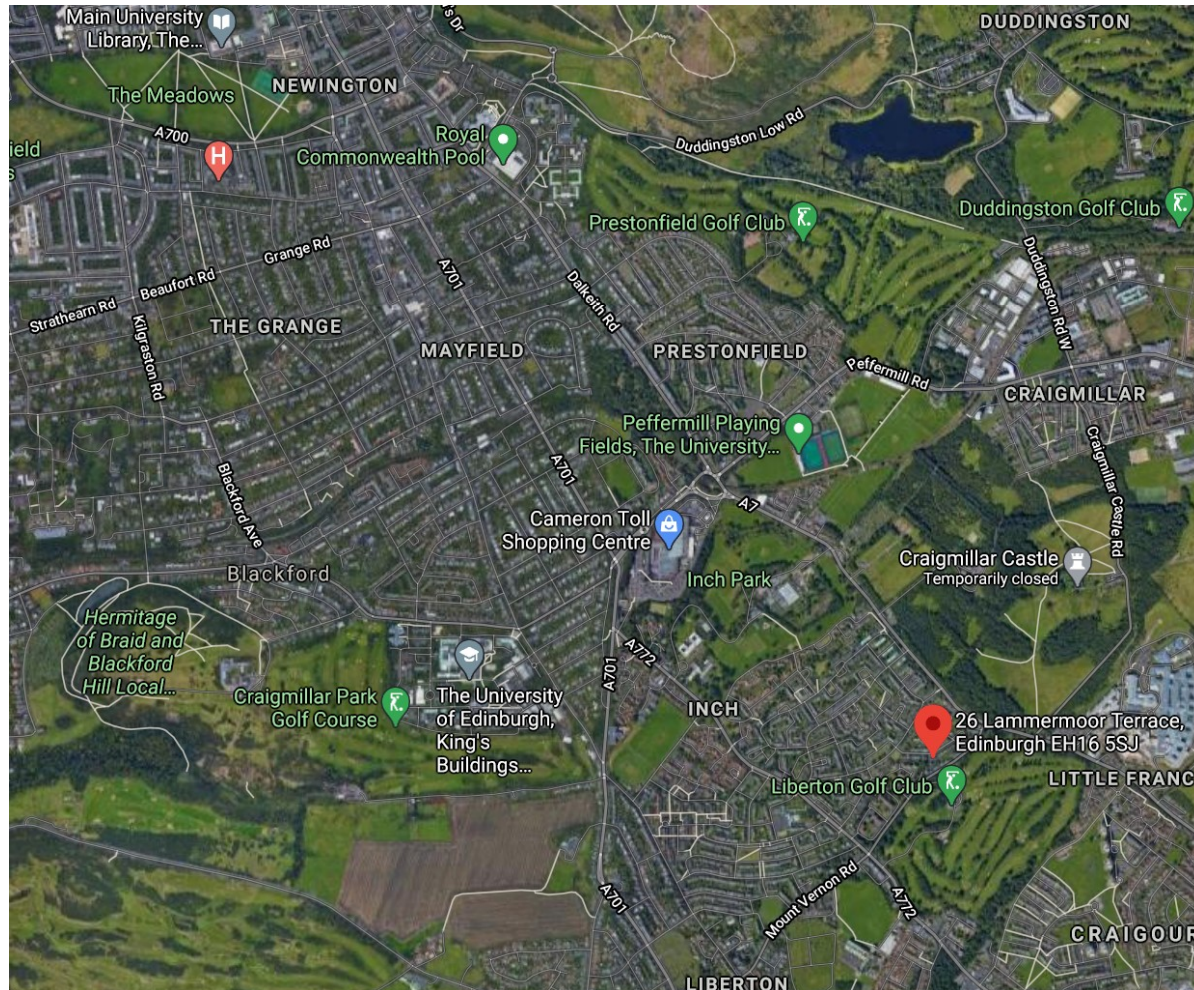


# Garden at 26 Lammermoor terrace

Nenya's Design for Diploma in Applied Permaculture

## Part 1



The garden has been designed between 2009 and 2020 with the help of the  
**Simplest Design Process (J. Chapman)\*:**



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\* <https://nonstuff.co.uk/permaculture-3/the-simplest-design-process-e-book/>

# Timeline:

Late 2008 – move to 26 Lammermoor terrace.

2009-2011 – **Initial Design and Implementation** (pre-PDC but Permaculture-inspired): growing food, esp. perennials, increase diversity, decrease inputs of energy and water.

2012 – **PDC** (Ragmans Lane, with Patrick Whitefield)

2012 – Begin rethinking the design using insights from the PDC

2014 – Permaculture Educators' course; **start Diploma**, begin working with James Chapman and get acquainted with the **Simplest Design Process** (a little less sleek at the time).

2014 – Complete the **Final Design for Back Garden**

2014-2016 – Implement the Final Design for Back Garden

2017 – Complete and implement the **Final Design for Front Garden**

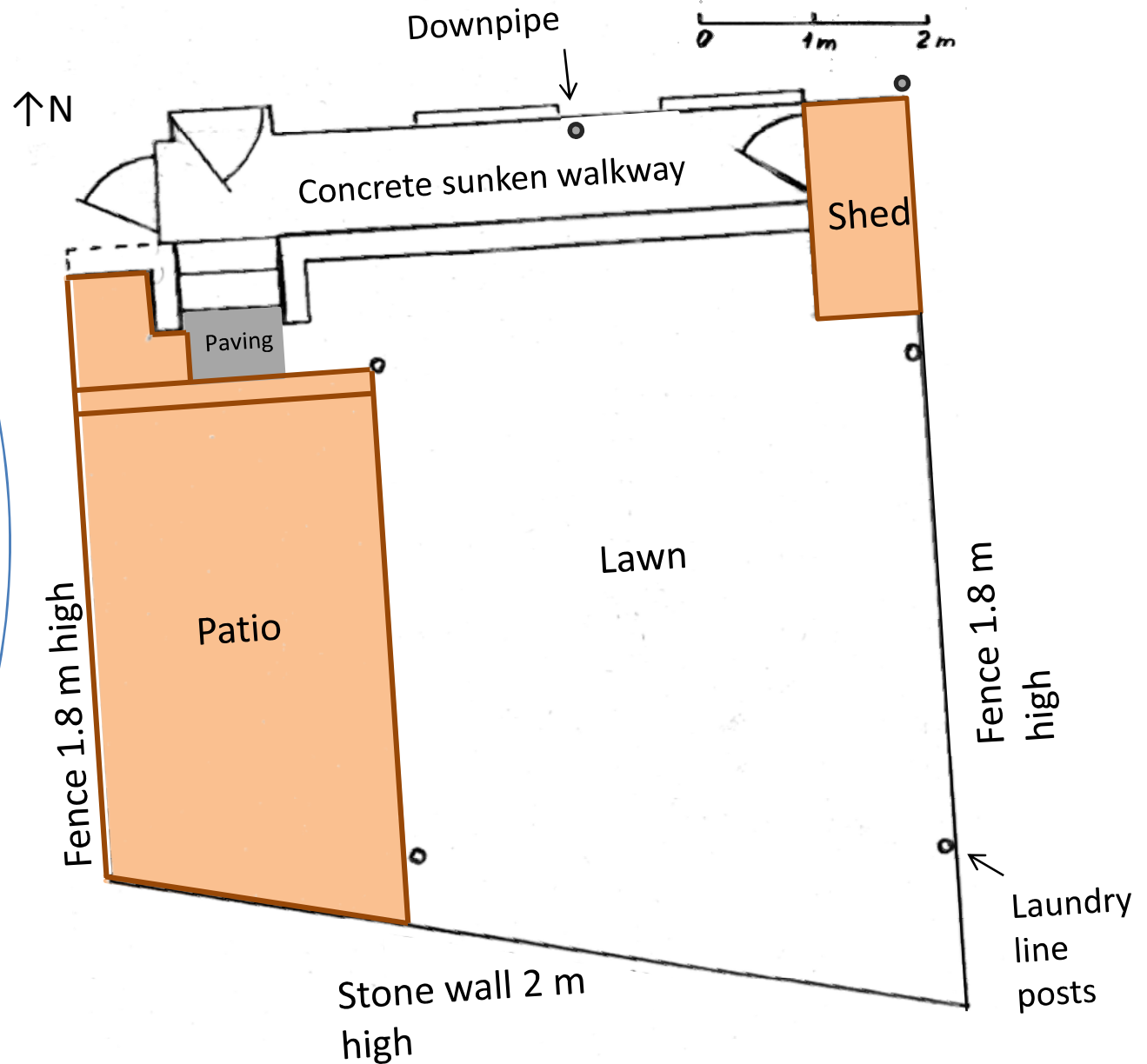
2019-2020 – Tweak design of the Back Garden owing to another project (Compost toilet).



## Back garden in 2009, pre-design

### Initial Survey / Observations

- Small! Less than 7x7m
- Sunny, private
- Sheltered from N
- Can be windy
- Gentle slope down to N
- Shade on S boundary
- No water source – but downpipe
- Birds
- Few worms
- Clay lumps

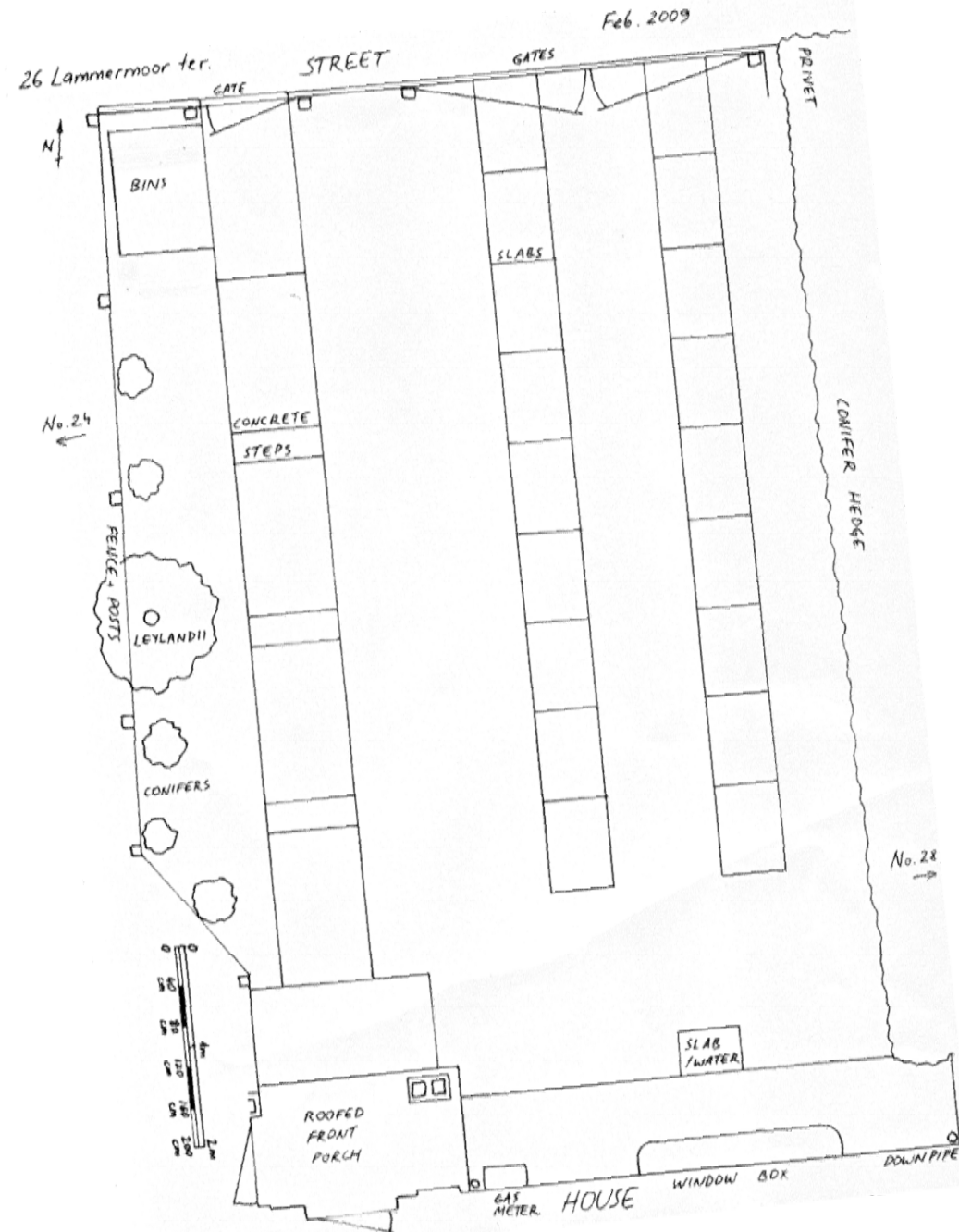




## Front Garden in 2009, pre-design

### Initial Survey / Observations

Still small! About 8x10m  
North-facing, not private  
Gentle slope down to N  
Shaded on S (house)  
No water – but downpipe  
and porch roof  
Poor lawn, few other plants  
Conifer hedge on E  
Rain shadow on W  
Birds, cats, foxes, dogs  
Badly made fence  
Winds from E & W  
Few worms



## Initial Brief:

**Grow** fruit, vegetables, herbs, rescued 'garden escapes', ornamentals

**Diversity** of species and habitats

**Water** in / for the garden

**Inspire** others to do Permaculture

– low maintenance and beauty

**Enhance** views and privacy

**Social** space



## Ideas / Research:

**Forest garden**

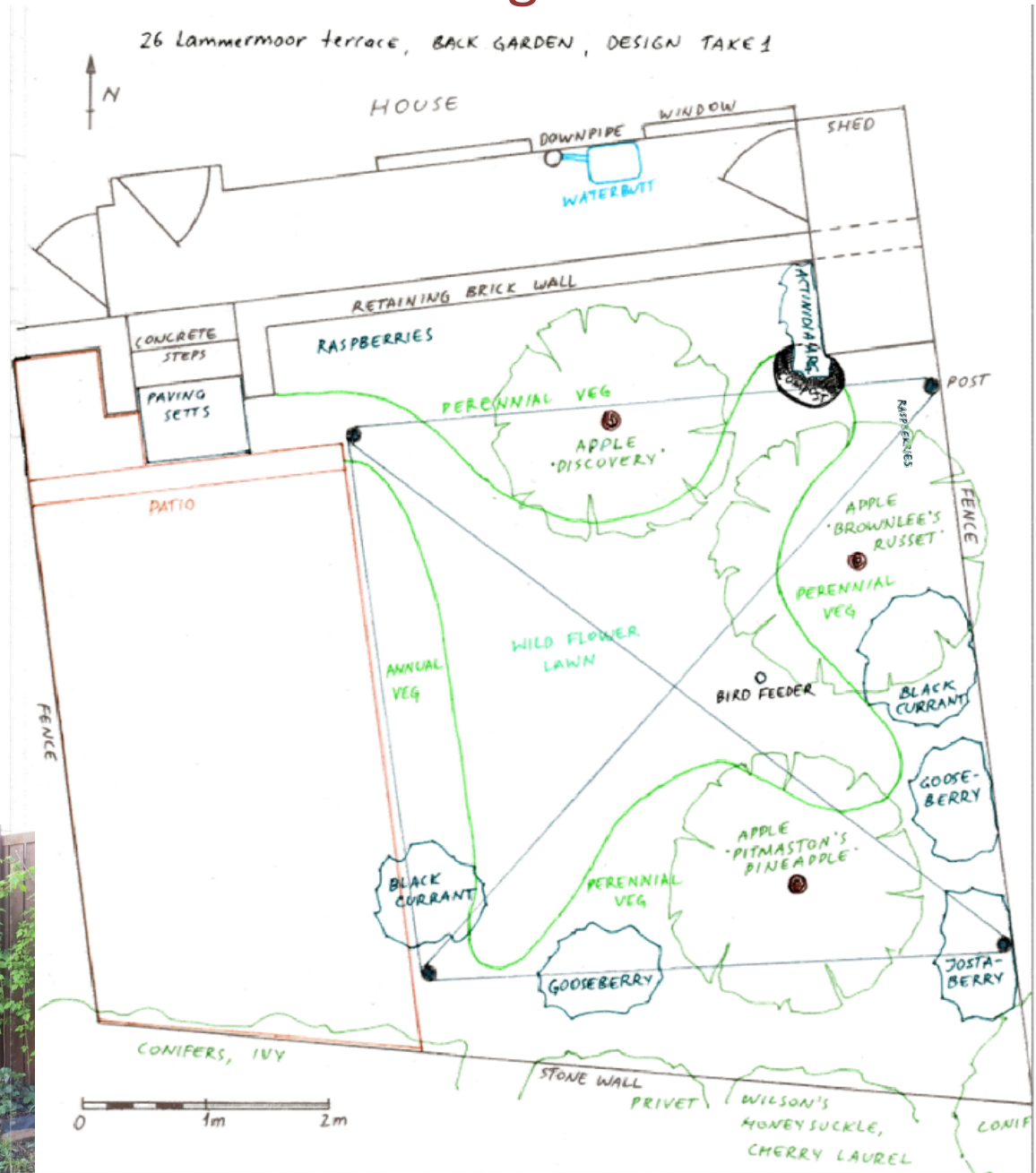
**Unusual edibles** – perennial vegetables, unusual fruit, edimentals;

**Wild flower meadow** instead of lawn  
**Propagate** plants, experiment and see!

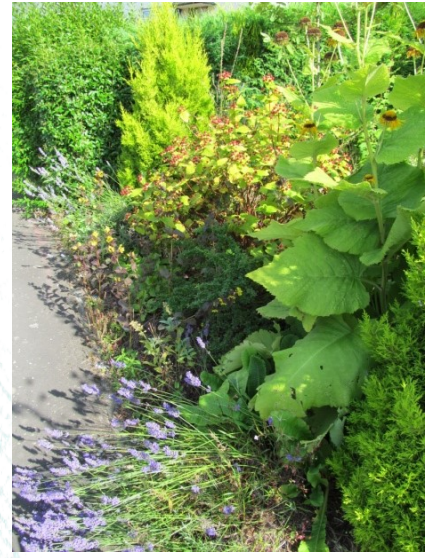
**Water** harvesting and storage; pond?

**Compost** and soil improvement

# Initial design and implementation: back garden 2009-2010



# Initial design and implementation: front garden 2010-2011





# Evaluation (2012): PMI

## ‘PLUS’:

Forest Garden maximises useful space:

- Good access to veg along the bed edges;
- Good light conditions;
- Vertical stacking = room for lots of plants;

Good use of on-site & free materials.

Wildlife and plantlife thriving.

## ‘INTERESTING’:

- Lawn rarely used as seldom have weather for it.
- Patio underused – not the ideal form of social space, grows algae & slippery in wet weather.
- New insights and design skills from PDC.
- Although both my husband and I love the garden, I am the main gardener and designer.
- New garden user! Lawrence born May 2012.

➔ Back to the Design Process!

## ‘MINUS’:

Poor access to back of beds for maintenance or harvesting.

BG: Raspberries spread and screened the view.

BG: Maintaining lawn + edge - a constant chore.

FG: overambitious design relying on lacking skills - pond, bog and watercourse unfinished, growing weeds instead, and mounds too dry.


Neighbours seem in no rush to follow our lead (possibly because the FG design was never fully implemented!)

Some plants too aggressive (*Phigelius*, *Carex* etc.).




# Design Take 2 (2012 onwards) – initial thoughts



**Additional Brief:**  
Child-friendly  
More food: 'Forage garden'  
Easier access to produce  
Place to propagate plants  
Lower maintenance  
Wildlife-friendly  
Place to relax  
Wind protection



**Ideas / Research:**  
Raised beds in BG  
Terracing in FG; windbreak  
Ponds, birdfeeder  
Paths suitable for little wheels  
No patio, no lawn  
Proper compost  
Frogs? Ducks?  
Greenhouse?



Design

**Survey more!**  
Cats catch frogs  
Foxes kill ducks...  
Planning permissions   
Some DIY skills but not loads  
Cheap old scaffolding boards  
Free paving setts   
Lawn soggy in winter  
Some areas v. dry  
Slugs! Snails!

## Further Survey: **Zone, sector, elevation and slope**

**Zone:** FG (as of 2012) zone 2-3 (feels exposed, unwelcoming; food plants still small). Would like to make it zone 1-2 – more useful food plants, easier access, better sheltered from the street. BG: zones 1-2 (3 along the back wall), 5-ish high up in the surrounding trees.

**Sectors:** Wind: W, SW (dominant, often moisture-laden), E, NE (often in winter and spring, but increasingly other times of year) Affect FG especially but also BG despite tall fences (turbulence).

Sun: FG north-facing, shaded by the house – although enough light in summer.

BG south-facing but tall hedge to S and distant tall trees (in winter, they screen the sun). Several trees in neighbours' gardens to S have been cut down in 2018-20, allowing more sun in, but as our own trees mature they will cast more shade.

Water – rain (lots), gardens feel damp in cold season, but can be very dry in late spring / summer. 'Flood' (standing water to 2 inches deep) along the sunken concrete path in BG after strong rain.

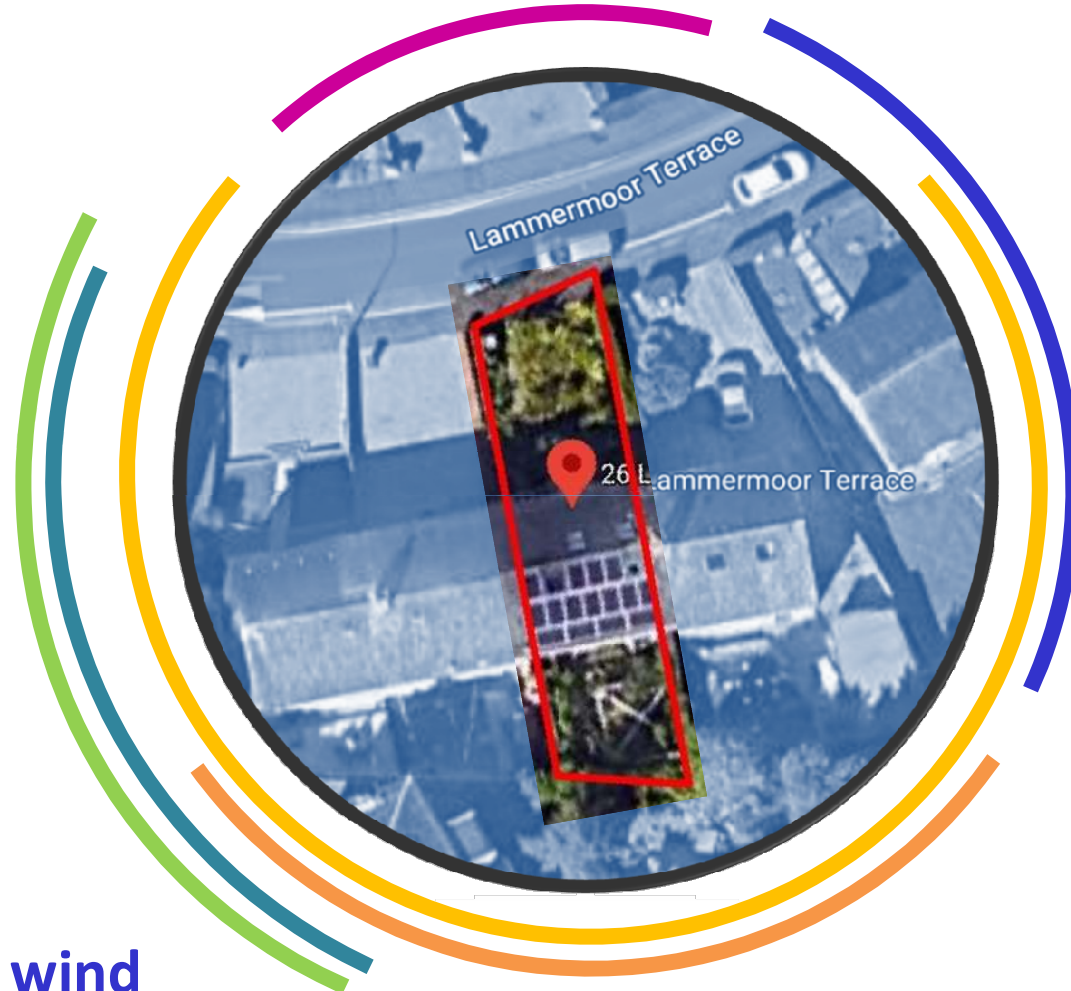
Rubbish blown in, occasional dog incursions (+ poo) in FG, cats (+ their poo) in both F & BG.

Noise – little from traffic but people can be noisy, neighbours' Fri night parties into small hours of Sat). Bird song and calls, inc. owl hoots. Emergency vehicle sirens (hospital near).

**Elevation** is  $\approx$  67 m above sea level. The house is at the highest point on the street.

**Slope:** both FG and BG slope down to N (although in BG the earthworks will have eliminated the slope in the garden itself (see design maps for land profile)).

Sectors:



**Summer sun**

**Winter sun**

**Prevailing wind**

**Rain, moisture**

**Damaging spring wind**

**Rubbish, pollution**

(Noise can come from any direction)

## Further Survey: **Climate and microclimate (1)**

We are in the cool temperate climatic zone. Our climate is typical for inland SE Scotland.

The most significant climatic factors are:

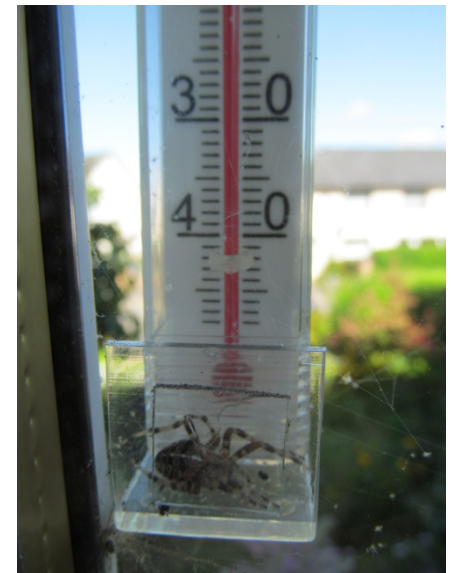
**T and frost:** the USDA hardiness map puts us in **Zone 8a** (with winter minimum T to  $-12.2^{\circ}\text{C}^*$ ),

- We are too far from dense urban areas to experience much urban heat island effect.
- The street microclimate is colder than the neighbouring area (very obvious during frost).
- Microclimate next to house walls is warmer: closer to 8b on N side and 9a on S side.
- The sheltered perimeter of BG is 8b.
  
- There is usually something green in the garden even in winter (when not covered by occasional snow or wilted by frost) – trailing bellflower, Babington's and elephant leek, tree onions, perennial rocket etc.
  
- Mean daily summer T is  $10^{\circ}\text{C}$  (min) to  $18^{\circ}\text{C}$  (max).
- Mean daily winter T is  $0^{\circ}\text{C}$  (min) to  $6^{\circ}\text{C}$  (max).\*\*

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\* <https://www.trebrown.com/hrdzone.html>

\*\* <https://www.metoffice.gov.uk/research/climate/maps-and-data>



Front Garden on a winter's day



## Further Survey: **Climate and microclimate (2)**

**Wind:** prevailing W-SW and the seasonal E-NE.

- Palpably lower the ambient T in the garden
- Turbulence in BG from the wind blowing over the solid fences on E and W.
- FG is very windy, especially from W, to the point that after 5 years trees needed re-staking.

Annual **rainfall** of 1000 mm on average\* could make us self-sufficient in water, but lack of storage is Limiting factors.

Variation in rainfall, some seasonal (dry springs with only 100-200 mm on average) but some quite random (e.g. unusually dry winter of 2018, almost 2 months-long drought in April-May 2020).

Days of rain (based on 2020 data): 220 over 0.2mm and 160 over 1.0mm

- There is some **rain shadow** along E and W in FG, and on all sides of the BG.
- E side of BG is a lot drier than W (it experiences hotter afternoon sun).
- N end of FG is dry despite being at the bottom of the sloping garden.
- In the cold season, the garden feels damp and cold even on dry days.

**Sun:**

Sunlight: 1300-1500 hours per year\*

- sunny and sheltered microclimate along the S-facing house wall in BG.

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\* <https://www.metoffice.gov.uk/research/climate/maps-and-data>

The sheltered sunny microclimate along the south-facing wall





## Further Survey: **Limiting factors**

**The small size** of the garden limits ambitions re self-sufficiency in food, energy, water etc., and also functions such as storage water, wood etc.

**Novel and experimental nature** of many promising food plants also means less than maximum productivity from the available space.

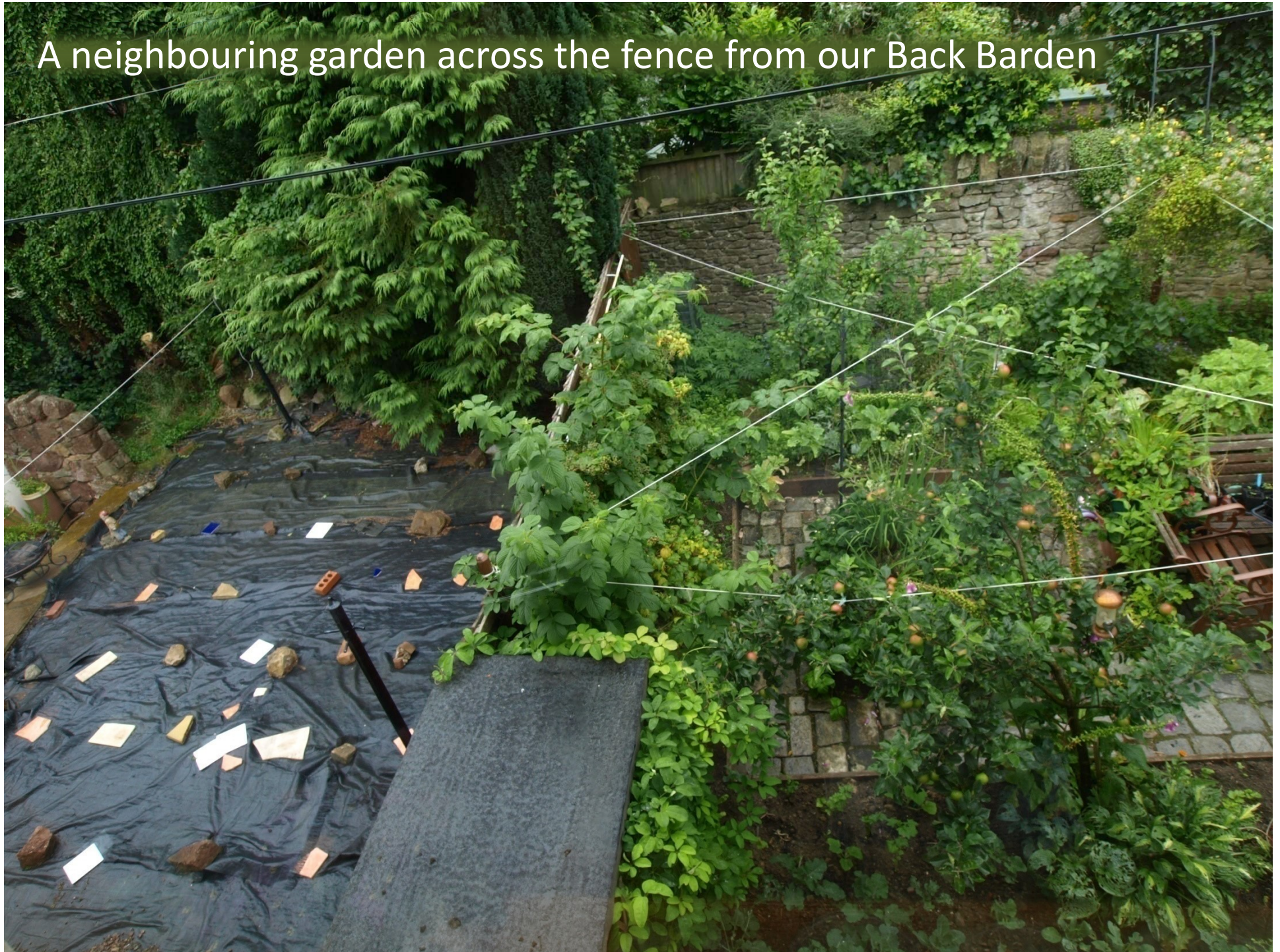
**Water** is occasionally a limiting factor (we can have 2 months with barely a raindrop during a growing season).

**Time and labour** can be limiting factors, especially in spring when annuals for the allotment need to be started / potted up / planted out.

**Money** isn't unlimited (although we are more fortunate than many).

**Neighbours** have a 'scorched earth' approach to gardening, so we haven't set a local trend in Permaculture gardening – although some stop to say how lovely the garden is.

A neighbouring garden across the fence from our Back Barden



## Further Survey: **Other survey tools**

**Action research:** growing annual veg and trying out perennial crops while observing the garden in all the different seasons.

**Soil:** pH about 6.5-7 (analysed using an electronic pH meter), composed of app. 60% sand (black, most likely of volcanic origin) and 30% silt, with app. 5% each of clay and organic matter.

Subsoil (exposed during paving the BG and digging the pond) has more clay, so occasional lumps of heavy clay found in the soil suggest past earthworks (probably when patio and shed were built).

Perennials and some annuals grow well in the garden (lettuces, peas), but other annuals don't: brassicas stay a lot smaller than the same varieties grown on another site, and cultivated annual goosefoots and oraches don't grow well at all.

These species don't form mycorrhizal associations, which suggests that the soil is fungally-dominated (consistent with no-dig and little disturbance overall).



## Further Survey: DAFORM of birds and animals in the garden

(in brackets in blue where this differs for the area around for birds and animals – invertebrates are harder to observe in other people's gardens 😊), based on 12 years of observations.

	Birds	Animals	Insects & Invertebrates
D	Robins, blue tits (wood pigeons, jackdaws, crows)	Cats	Wood lice, spiders, snails, slugs, gnats, bumblebees
A	Wood pigeons, blackbirds, dunnocks, great tits (sparrows)	Frogs (since 2018)	Wasps (resident one year), cabbage white butterfly, painted lady butterfly, flies, leaf miners, aphids, tiger worms
F	Magpies, jackdaws, crows (buzzards, town pigeons)	Foxes, squirrels, mice – resident?	Solitary bees, other butterflies, moths, beetles, earthworms, ladybirds, hoverflies, millipedes, centipedes
O	Coal tits, wrens, long-tailed tits, bullfinches, chaffinches, (rooks, tawny owls)	Dogs, rats, bats	Sawflies, Daddy-long-legs, NZ flatworms
R	Goldcrests, pheasants, collared doves (sparrow hawks)	(Frogs)	Honey bees, lacewings, Devil's coach (?) beetle, dragonflies, mosquitoes, midges
M	Sparrows, wagtails		

Residents... and visitors



## Further Ideas / Research

**Forest Edge garden** – the idea of using boundaries as a Forest Garden and the middle of the garden as a sunnier clearing. Forest Garden itself – stacking layers, underplanting; young trees let in more light so a sweet period when annual veg can also be grown.

Expand the range of **unusual edible perennials**. ‘Rehabilitate’ species that grow well but don’t taste too exciting (e.g. good king Henry) by trying different cooking methods for them.

**Water capture in the landscape: terracing** in FG, and in BG **raised beds** around a sunken area either paved with setts with sand in between (which draws out excess moisture during wet season and conserves it for drier times), where tree and shrub roots can also reach. **Mulching** paths with a deep layer of woodchip (easier implementation than paving but more maintenance, and less friendly to wheels). **Organic mulches** (compost, woodchip) or plant cover on beds.

**Water harvesting (butts) and overflows** directed into the driest areas, and for automatic watering of window boxes.



Waterbutt, overflow  
and self-watering  
windowboxes in the  
Front Garden