

Experiences from the ORC's Machinery Trials



Machinery Trials

Elm Farm December 2014

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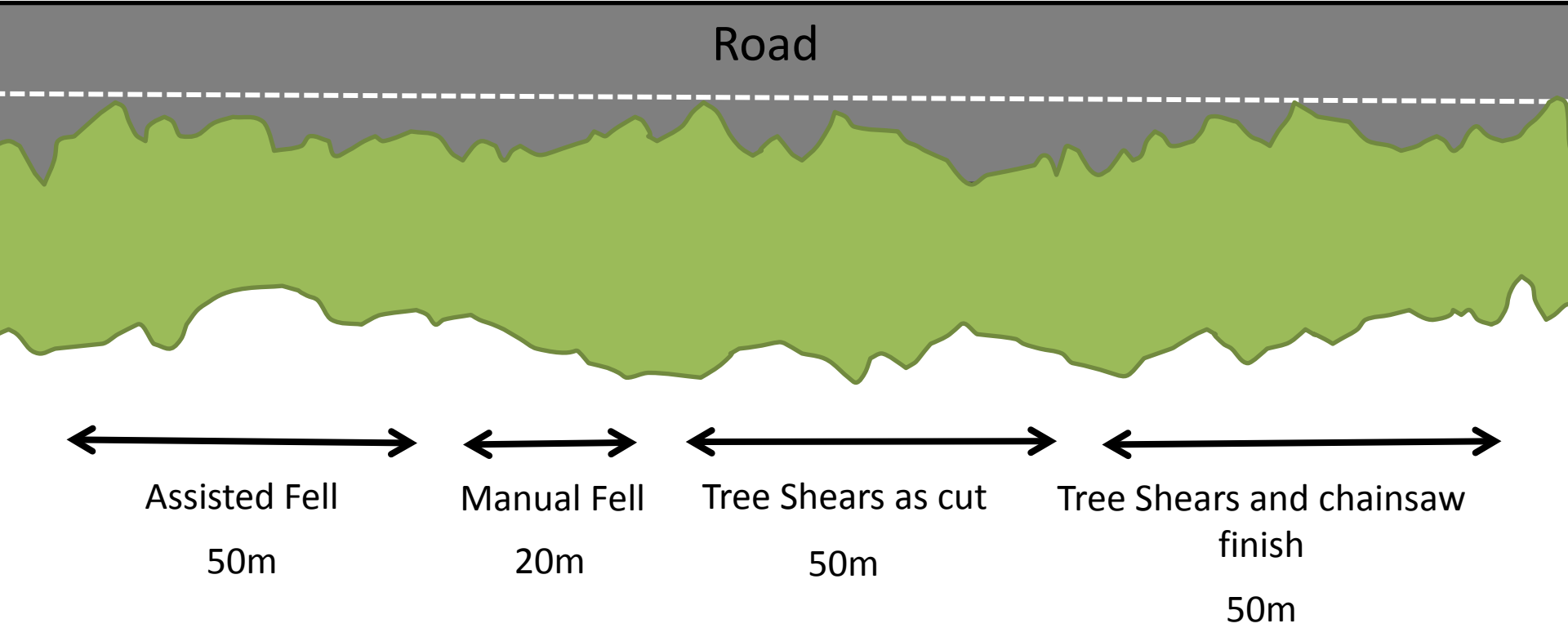
Wakelyns February 2015

Hedge at Elm Farm



Coppicing Methods

Elm Farm

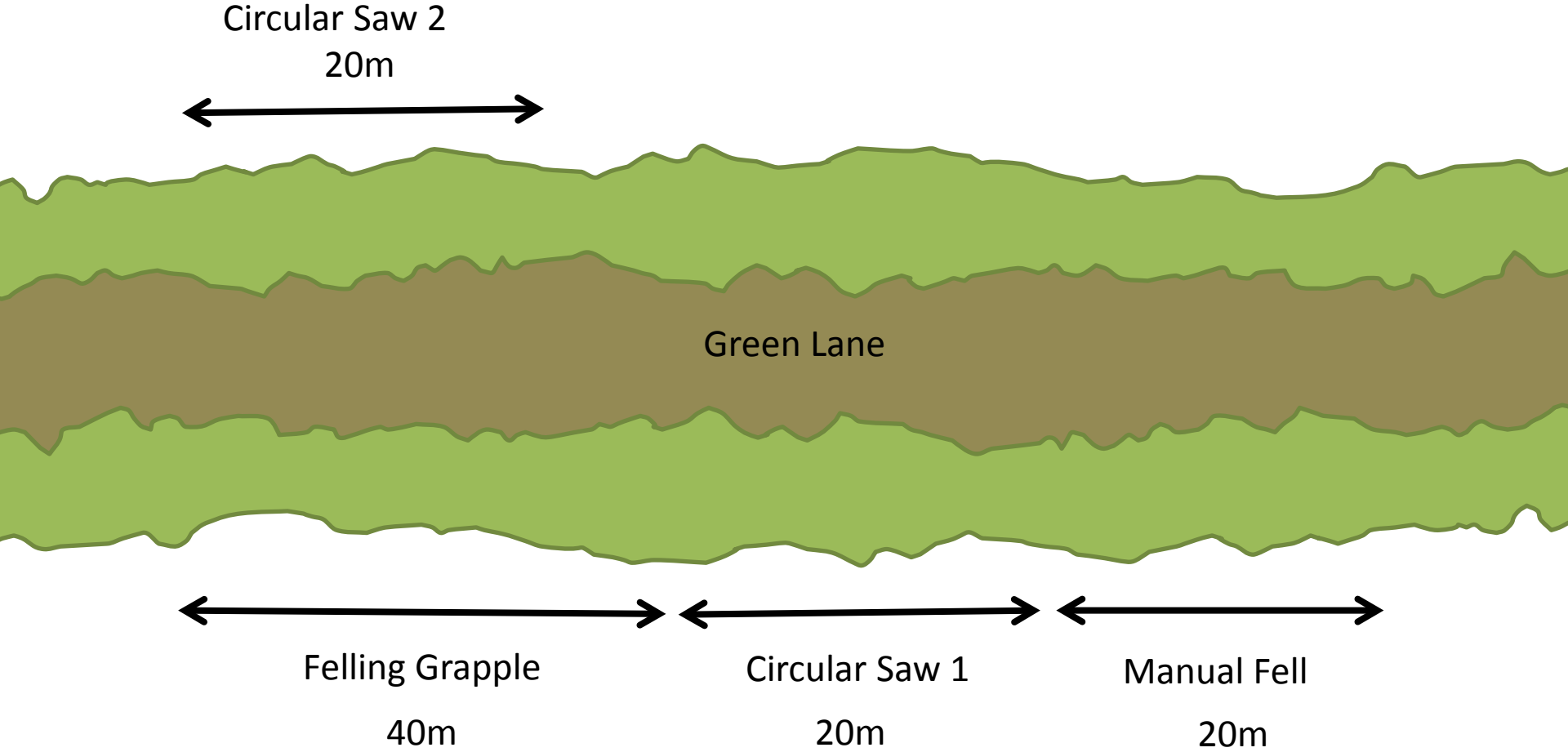


Hedge at Wakelyns



Coppicing Methods

Wakelyns





Manual Fell

2 man team and chainsaw





Assisted Fell

2 man team, chainsaw,
and 8t excavator



Video of assisted fellers at work



Tree Shears

1 man team, 10" Dymax tree shears mounted on 9t excavator

Three finishes:

- Tree shears as cut
- Chainsaw finish (short)
- Chainsaw finish (long)



Video of tree shears at work





Circular Saw

2 man team, tractor mounted circular saw, tractor with fork



Video of circular saw at work



Felling Grapple

1 man team with Gierkink felling
grapple mounted on 5.5t
excavator



Video of felling grapple at work

Chipping Methods





Large Scale

Tractor towed Heizohack HM 8-500 K fuel grade chipper with crane



Video of large chipper

Small Scale 6" Timberwolf





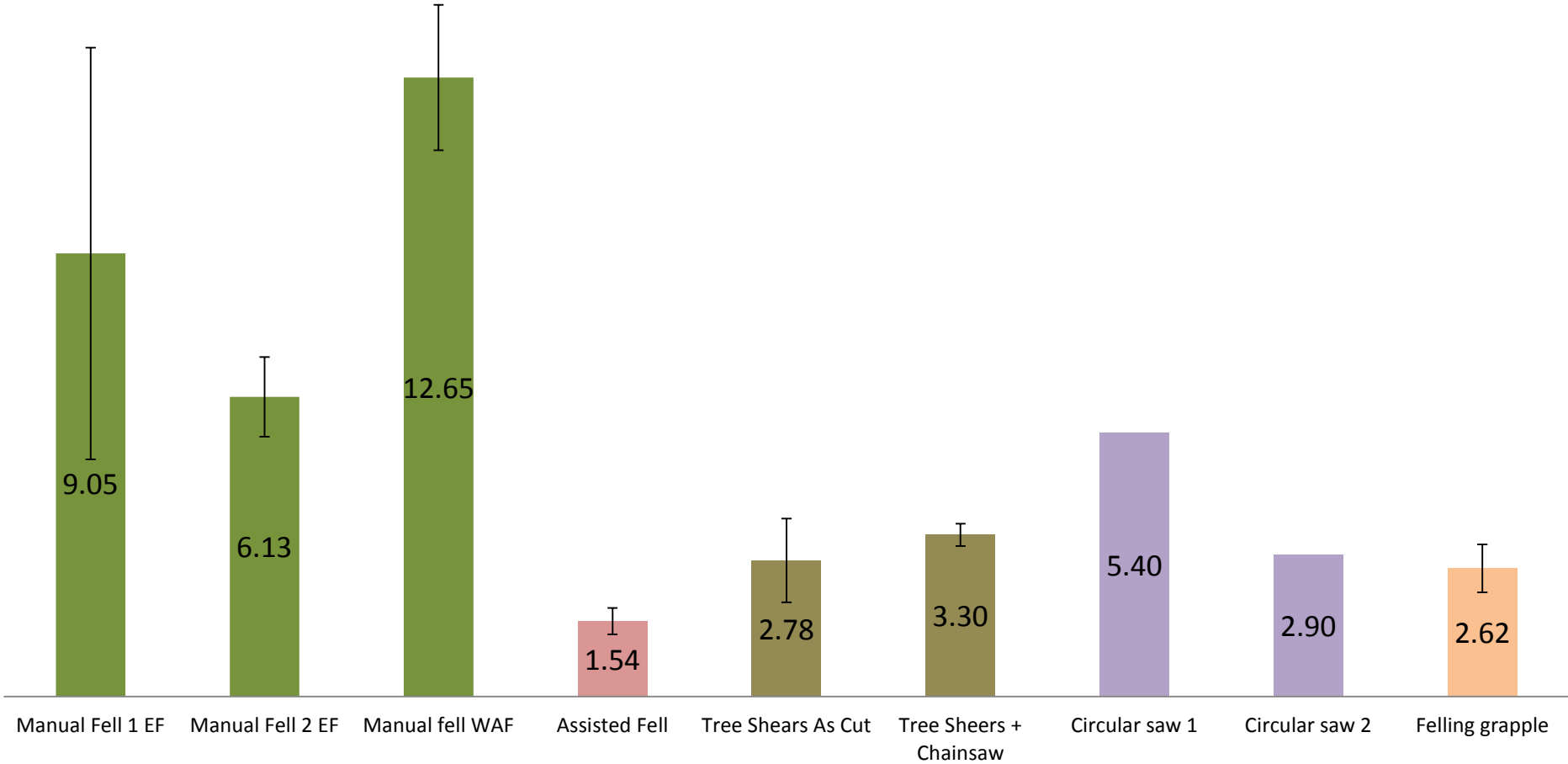
Video of small chipper

Wakelyns Processing

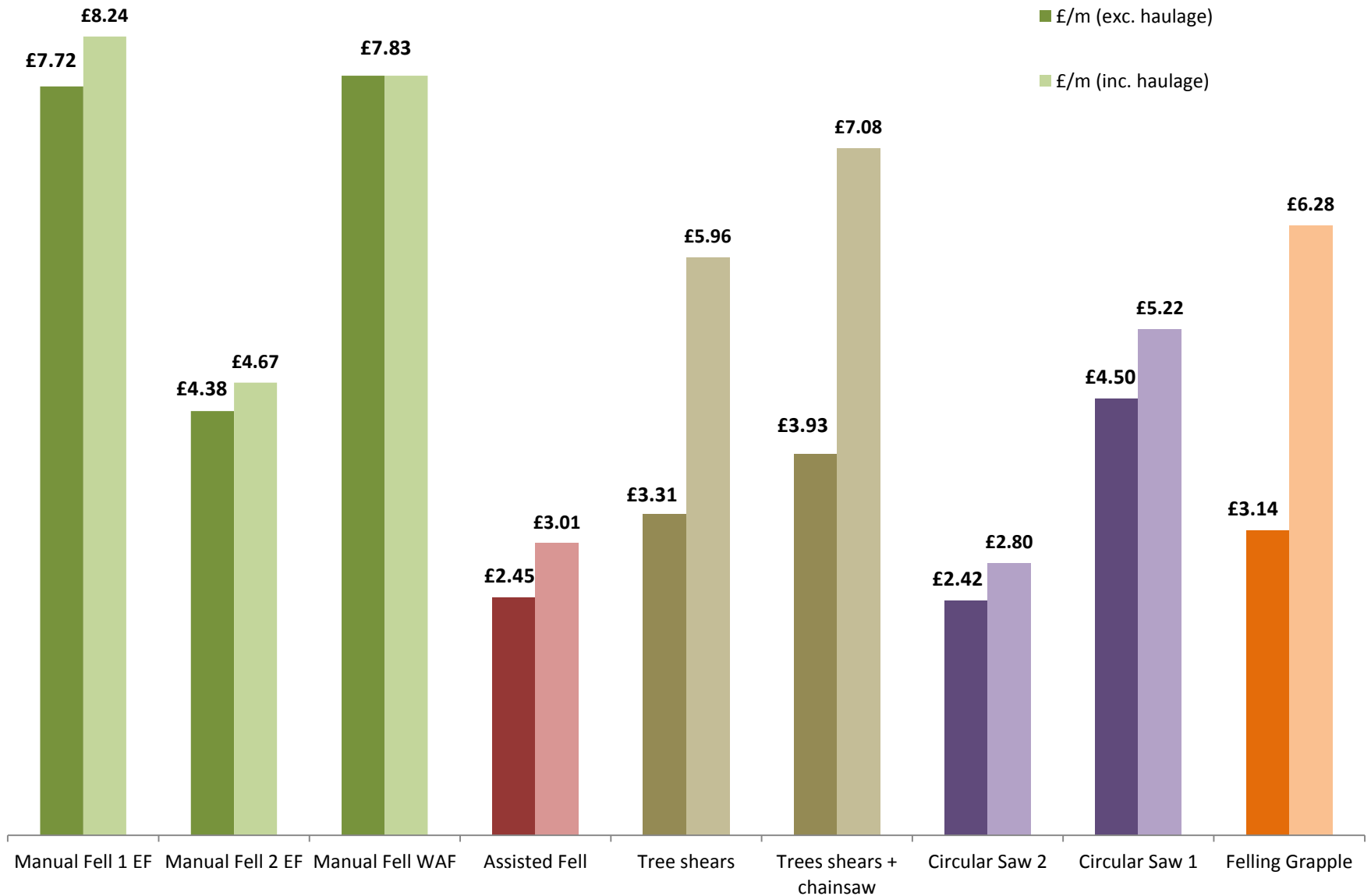
Woodchip vs Logs

The Results

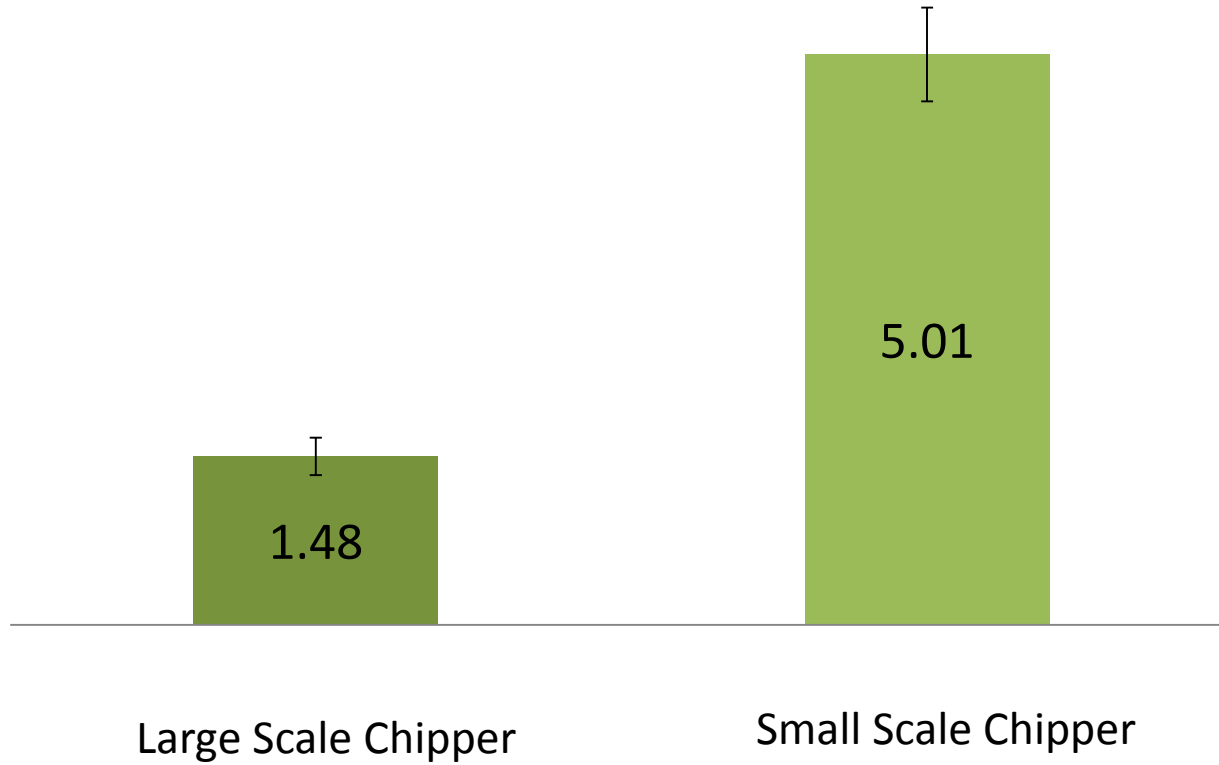
Mean Minutes per Metre of Hedge Cut



Cost per Metre of Hedge Cut



Mean Minutes per Metre of Hedge Material Chipped



Cost (£) per Metre of Hedge Material Chipped





Woodchip Production at Elm Farm

Actual fresh volume/mass at 47% MC

Average of

0.26 m³ / 0.08 tonnes / 84.12kg

per metre of hedge

42.5 m³ / 14.3 tonnes / 14300 kg

harvested from 170m of hedge



Woodchip Value

Net profit £/m³



*HWFC Hampshire Woodfuel Co-operative, based on Feb 2015 rates



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Let's take the best case
scenario ...

£14.39 per m³ + large scale
chipper + minimum of 300m of
hedge

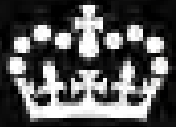
Savings made on reduced hedgerow flailing

With a flailing cost of **£1 per metre**
and assuming we side flail only every 3 years

A potential saving of

£13 per metre over a 20 year hedgerow coppice rotation

* £1 per meter is based on contracting bills and information from flailing contractors for a large west country hedge 3-4m wide (Dickenson, R. 2014).


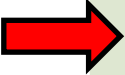


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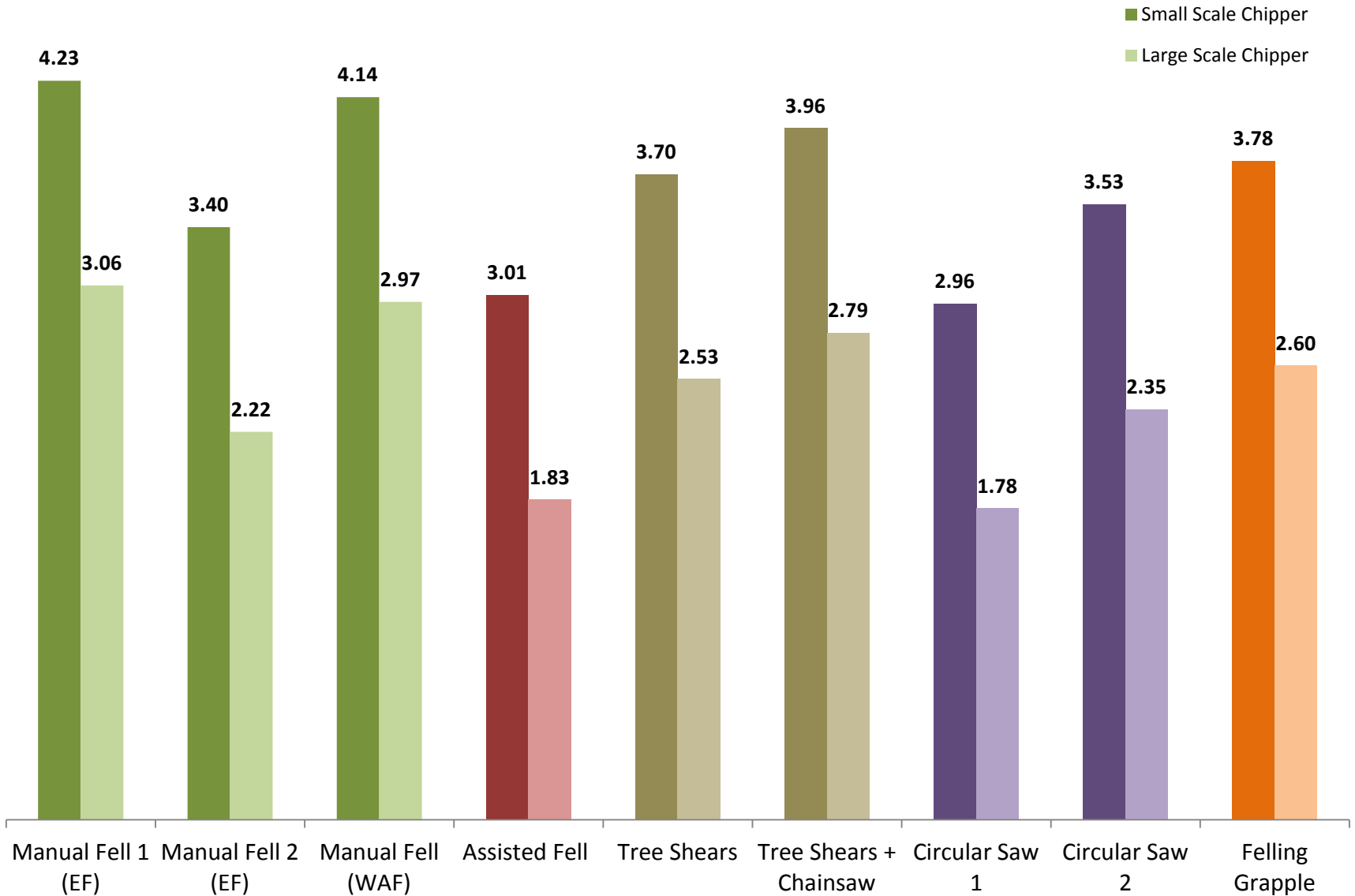
Countryside Stewardship grant
Hedgerow coppicing (BN6)

£4 per metre

On hedges over 20m long, less than 5m wide and composed of at least 80% native shrubs

Method	Net Cost/ Profit (£/m)	Net Cost/ Profit (£/m) Inc. flailing savings	Net Cost/ Profit (£/m) Inc. flailing savings + coppicing grant
Manual Fell 1 (EF)	-9.43	+3.57	+7.57
Manual Fell 2 (EF)	-5.86	+7.14	+11.14
Manual Fell (WAF)	-9.02	+3.98	+7.98
 Assisted Fell	-4.20	+8.80	+12.80
Tree Shears	-7.15	+5.85	+9.85
Tree Shears + Chainsaw	-8.27	+4.73	+8.73
 Circular Saw 2	-4.00	+9.00	+13.00
Circular Saw 1	-6.41	+6.59	+10.59
Felling Grapple	-7.48	+5.52	+9.52

Pence per Kwh



Comparative Energy Costs to a Customer

Fuel + Method	Pence per Kwh	Comments
Hedgerow woodchip self supplied (large scale chipper)	1.6 – 3.1	Depends on which harvesting method (does not include transport cost as self supplying)
Hedgerow woodchip supplied (small scale chipper)	2.8 – 4.2	Depends on which harvesting method (does not include transport cost as self supplying)
Bought in wood chips (30% MC)	3.1*	Mean UK price for bulk order of 10 tonnes
Bought in logs (30% MC)	3.5*	Based on bulk delivery of 1 tonne
Wood pellets	4.4*	Mean UK price based on bulk order of 5 tonnes
Natural gas	4.9*	
Heating oil	5.8*	
LPG (bulk)	6.5*	
Electricity	15*	

* Figures taken from DHG publication 'Wood Fuel From Hedges' 2014

A supplementary
enterprise?

RHI payments?

Other grants and funding?

Where next?

Farmers making use of
existing resources and
machinery?

Demonstration/best
practice sites ?