

Appendix VII

Fleet Basin LMP: Acid sensitive catchments

The purpose of this document is to demonstrate that felling and restock proposals for Fleet Basin are compliant with the 'Managing forests in acid sensitive water catchments' FC practice guide (2014). The acid sensitive catchments relevant to Fleet Basin are assessed as follows:

- 1.0 Critical loading is considered for water bodies with a 'failing' status: restocking proposals are evaluated to determine if the area of closed canopy forest (age > 15 years) will exceed 30% of the (sub-)catchment in 15 years' time.
- 2.0 Potential felling impacts on the site are assessed for catchments with a 'failing' or 'at risk' status: the scale of planned felling in any three year period is checked against a 20% (sub-)catchment threshold.

The relevant catchments are described below and shown in maps (3.0) at the end of this appendix:

- Big Water of Fleet is an acidified catchment: 4,030 ha, overlapping Fleet Basin block and privately owned woodlands.
- Little Water of Fleet is an acidified catchment: 2,509 ha, overlapping Fleet Basin block and privately owned woodlands.
- Airie Burn is an acidified catchment: 2,769 ha, overlapping Fleet Basin, Bennan and Laurieston blocks, and privately owned woodlands.
- Pullaugh Burn (including Cuttiemore Burn) is a catchment at risk of acidification: 1,992 ha, overlapping Fleet Basin, Clatteringshaws, Round Fell, and Bennan blocks.

Catchments and sub-catchments were generated using ArcMap and their accuracy checked against the approach described in practice guidance. For presentation purposes, catchments and sub-catchments have been labelled alphabetically. Felling and restocking information for the National Estate was accessed via FLS's internal geographic information system. For privately held forests, National Forest Inventory (2020) data was used with supplementary data provided by Scottish Forestry's South Scotland Conservancy.

Note that only results pertinent to (sub-)catchments that directly interact with Fleet Basin block are presented below. Threshold exceedances occurring in (sub-)catchments directly interacting with other FLS land management units will be addressed under the relevant land management plan revision.

1.0 Assessment of canopy cover

Big Water of Fleet catchment

As shown in the table below, the estimated area of closed canopy forest (age >15 years) in 15 years' time does not exceed the 30% threshold across the sub-catchments and wider catchment.

Assessment of canopy cover for the Big Water of Fleet catchment		
Catchment	Estimated area of closed canopy forest (age >15 years) in 15 years' time	
	Hectares (ha)	Percentage (%)
A	130.9	3.2
B	146.4	3.6
C	89.1	2.2
D	0.0	0.0
E	6.8	0.2
F	95.1	2.4
G	15.1	0.4
H	1.3	0.0
I	319.5	7.9
J*	1156.0	28.7

Only (sub-)catchments directly interacting with Fleet Basin land management unit.
+ The entire catchment.

Little Water of Fleet catchment

As shown in the table below, the estimated area of closed canopy forest (age >15 years) in 15 years' time exceeds the 30% threshold within the catchment as a whole.

Assessment of canopy cover for the Little Water of Fleet catchment		
Catchment	Estimated area of closed canopy forest (age >15 years) in 15 years' time	
	Hectares (ha)	Percentage (%)
A	52.9	2.1
B	71.6	2.9
C	0.7	0.0
D	34.2	1.4
E	695.6	27.7
F	86.8	3.5
G*	941.7	37.5

Only (sub-)catchments directly interacting with Fleet Basin land management unit.
+ The entire catchment.

Airie Burn catchment

As shown in the table below, the estimated area of closed canopy forest (age >15 years) in 15 years' time does exceed the 30% threshold, meaning these sub-catchments are vulnerable to a forestry acidification effect. The threshold is only slightly exceeded across the entire Airie Burn catchment, which encompasses both the National Estate and areas of private forestry.

Assessment of canopy cover for the Airie Burn catchment		
Catchment	Estimated area of closed canopy forest (age >15 years) in 15 years' time	
	Hectares (ha)	Percentage (%)
A	88.73	52.5
C	270.21	62.2
D	95.43	22.1
E	360.42	54.6
F	449.15	54.2
G	455.85	23.6
H*	908.82	32.8

Only (sub-)catchments directly interacting with Fleet Basin land management unit.
+ The entire catchment.

As a heavily forested area it is unlikely that compliance with the 30% threshold will ever be achieved as long as sustainable forestry is an objective.

Given that deforestation is not really an option, efforts to mitigate the forestry acidification effect will include increases to the overall area of open ground, increases to the area of buffered riparian zones, some targeted reduction of conifer plantation, increases in species diversity particularly broadleaf species and potentially identifying areas for peatland restoration to reduce water run-off across the plan area.

While these measures should make a positive contribution to water quality, mitigating opportunities are limited within the scope of this plan. Threshold exceedances and potential mitigating measures will therefore be considered further in the subsequent land management plan renewal.

2.0 Assessment of felling proposals

Big Water of Fleet catchment

As shown in the table below, proposed felling within sub-catchments directly interacting with the Big Water of Fleet is unlikely to have a significant effect on the freshwater environment and proposed felling across the entire catchment does not exceed the 20% threshold in any three year period.

Felling site impact for the Big Water of Fleet catchment								
3 year period	Estimated proposed felling in catchment (%)							
	A	B	C	D	E	F	I	J+
2021/23	-	11.1	-	-	-	-	4.7	0.5
2022/24	-	11.1	-	-	4.9	-	4.7	2.4
2023/25	-	4.7	-	-	4.9	-	2.0	2.1
2024/26	-	4.7	-	0.3	4.9	-	2.0	3.0
2025/27	-	4.7	-	0.3	-	-	2.0	1.8
2026/28	-	-	-	0.3	-	-	-	1.6
2027/29	-	-	-	-	-	-	-	0.6
2028/30	-	-	-	-	-	-	-	0.0
2029/31	-	-	-	-	-	-	-	1.3
2030/32	-	-	6.1	-	-	-	-	1.8
2031/33	1.7	-	8.1	-	-	9.7	9.8	4.9
2032/34	1.9	-	8.1	-	-	9.7	9.8	4.7
2033/35	1.9	-	2.0	-	-	9.7	9.8	4.8

Only (sub-)catchments directly interacting with Fleet Basin land management unit and where felling is proposed.
+ The entire catchment.

Little Water of Fleet catchment

As shown in the table below, proposed felling within sub-catchments directly interacting with Little Water of Fleet is unlikely to have a significant effect on the freshwater environment and proposed felling across the entire catchment does not exceed the 20% threshold in any three year period.

Felling site impact for the Little Water of Fleet catchment						
3 year period	Estimated proposed felling in catchment (%)					
	A	B	C	E	F	G+
2021/23	-	0.6	-	0.8	-	0.4
2022/24	-	0.6	-	3.7	-	2.1
2023/25	-	16.1	-	6.6	-	3.7
2024/26	-	16.1	-	8.2	-	4.6
2025/27	-	16.1	-	5.5	-	5.9
2026/28	-	-	-	2.5	-	4.2
2027/29	4.0	-	-	1.2	-	3.5
2028/30	4.0	-	-	0.4	-	0.2
2029/31	4.0	-	-	0.4	-	0.4
2030/32	-	-	-	2.4	-	1.5
2031/33	-	7.3	16.8	6.6	7.3	6.2
2032/34	-	7.3	16.8	6.6	7.3	6.0
2033/35	-	7.3	16.8	5.0	7.3	5.1

Only (sub-)catchments directly interacting with Fleet Basin land management unit and where felling is proposed.
+ The entire catchment.

Airie Burn catchment

As shown in the table below, there is one sub-catchment where the 20% threshold is exceeded. In an effort to reduce felling, there is no proposal to fell within this sub-catchment within the relevant three year period. Despite this, felling in the neighbouring Bennan forest remains in exceedance of the recommended threshold. Felling within Fleet Basin, however, is unlikely to have a significant effect on the freshwater environment and proposed felling across the Airie catchment does not exceed the threshold in any three year period.

Felling site impact for the Airie Burn catchment							
3 year period	Estimated proposed felling in catchment (%)						
	A	C	D	E	F	G	H+
2021/23	25.6	6.5	0.1	7.6	11.2	1.1	4.1
2022/24	6.7	6.4	0.1	4.3	4.8	1.1	2.2
2023/25	-	0.1	-	1.8	1.4	-	0.4
2024/26	-	4.5	5.6	4.7	3.7	1.3	2.0
2025/27	-	4.8	5.6	4.8	3.8	1.3	2.0
2026/28	-	4.6	5.6	3.1	2.4	1.3	1.6
2027/29	12.2	5.5	-	3.6	5.3	-	1.6
2028/30	12.2	5.2	-	3.4	5.2	-	1.6
2029/31	12.2	5.2	1.4	3.4	5.2	0.8	2.1
2030/32	-	-	1.4	-	-	0.8	0.5
2031/33	-	1.8	4.5	1.2	0.9	1.5	1.3
2032/34	-	2.8	3.1	7.5	6.0	0.7	2.3
2033/35	-	5.5	3.1	10.1	8.1	0.7	2.9

Felling site impact for the Airie Burn catchment

Only (sub-)catchments directly interacting with Fleet Basin land management unit and where felling is proposed.
+ The entire catchment.

Pullaugh Burn (including Cuttiemore Burn) catchment

As shown in the table below, proposed felling within sub-catchments directly interacting with Pullaugh Burn is unlikely to have a significant effect on the freshwater environment and proposed felling across the entire catchment does not exceed the 20% threshold in any three year period.

Felling site impact for the Pullaugh Burn (including Cuttiemore Burn) catchment

3 year period	Estimated proposed felling in catchment (%)		
	A	D	E+
2021/23	-	-	-
2022/24	2.6	1.1	5.9
2023/25	2.6	1.1	6.9
2024/26	2.6	1.1	8.8
2025/27	-	0.2	5.0
2026/28	-	0.2	3.9
2027/29	14.0	5.7	6.0
2028/30	14.0	5.5	4.3
2029/31	14.0	5.5	4.3
2030/32	-	6.0	4.7
2031/33	-	6.1	4.4
2032/34	-	6.1	6.0
2033/35	-	-	2.0

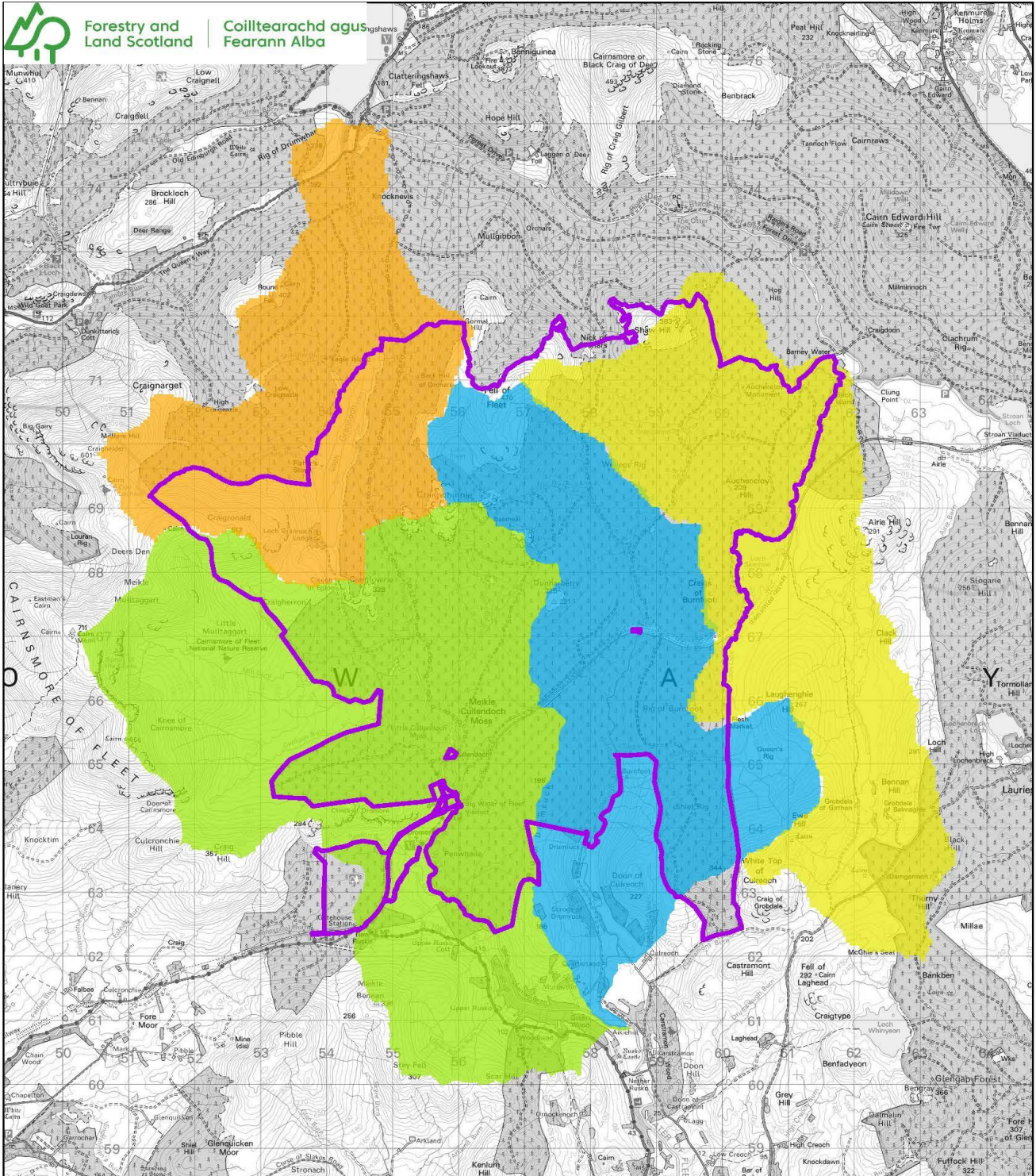
Only (sub-)catchments directly interacting with Fleet Basin land management unit and where felling is proposed.
+ The entire catchment.

3.0 Acid sensitive catchment maps



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Map i
Acid Sensitive Catchments

Scale @ A3: 1:55,000

Date: March 2023

Legend



Fleet Basin block



Little Water of Fleet catchment



Airie Burn catchment



Pullaugh Burn (including Cuttiemore Burn) catchment



Big Water of Fleet catchment



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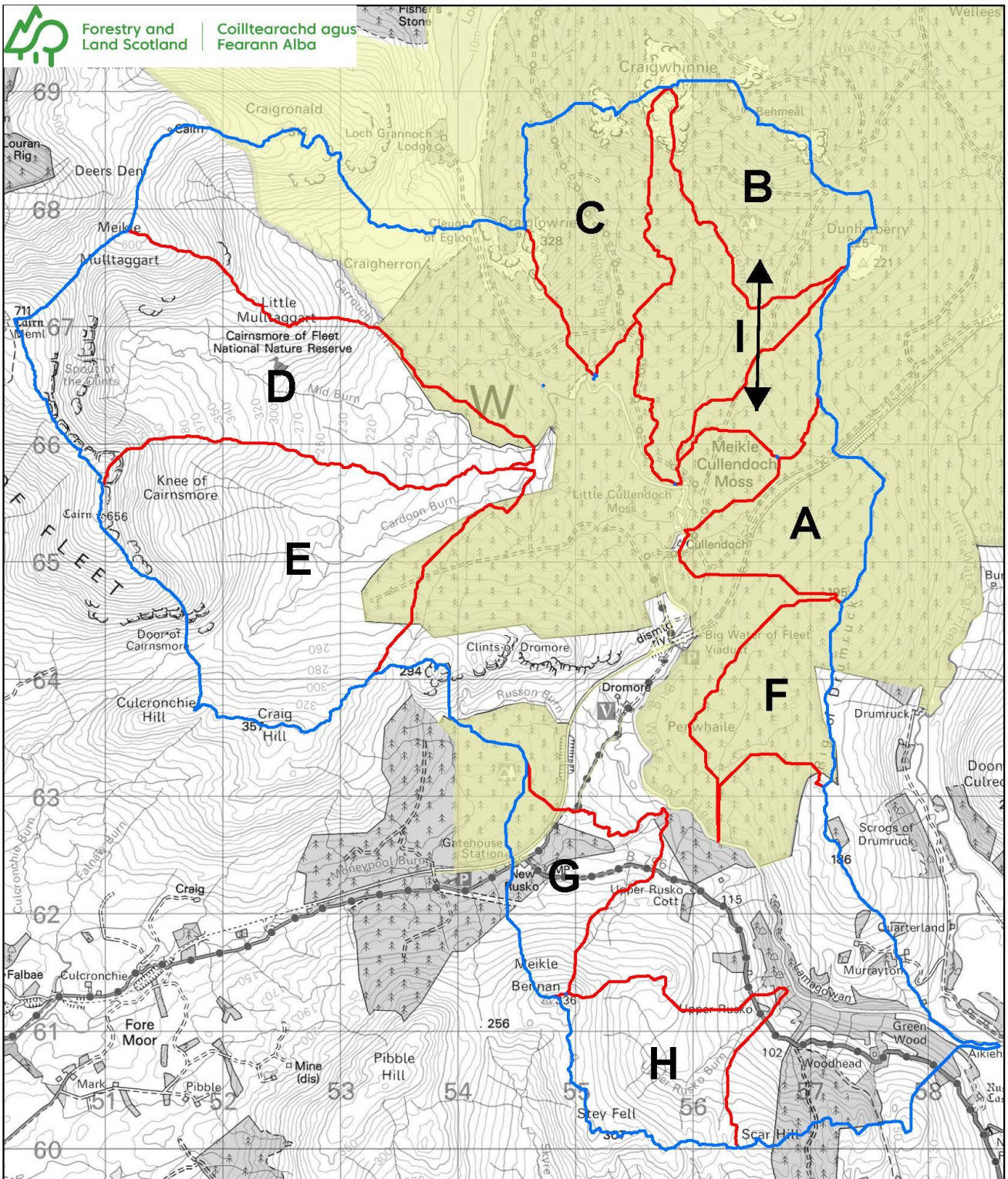
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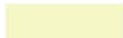


Map ii
Big Water of Fleet sub-catchments

Scale @ A3: 1:30,000

Date: March 2023

Legend

-  Catchment boundary
-  Sub-catchment boundary
-  Fleet Basin block

0 0.225 0.45 0.9 1.35 1.8 km

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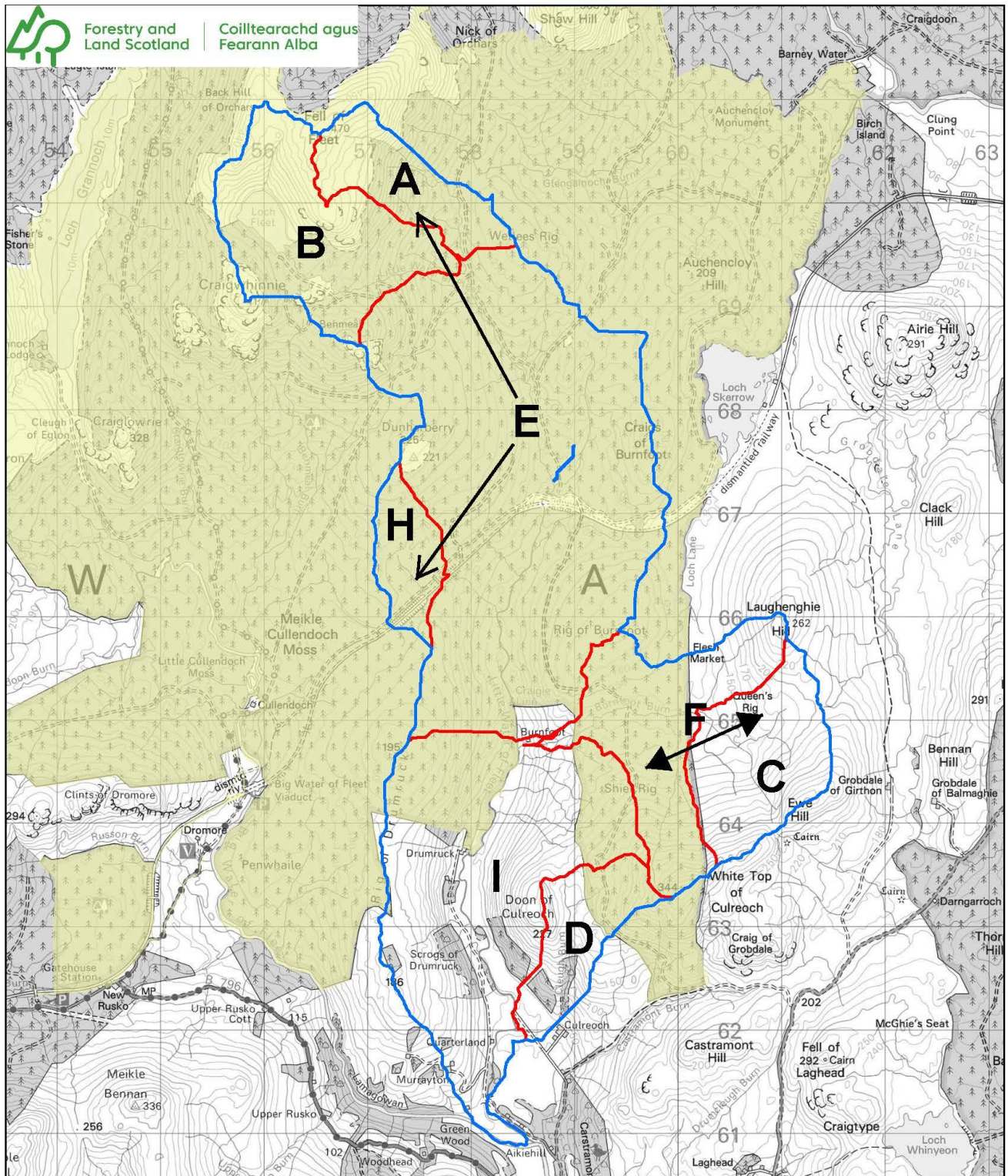
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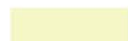


Map iii
Little Water of Fleet sub-catchments

Scale @ A3: 1:34,000

Date: March 2023

Legend

-  Catchment boundary
-  Sub-catchment boundary
-  Fleet Basin block



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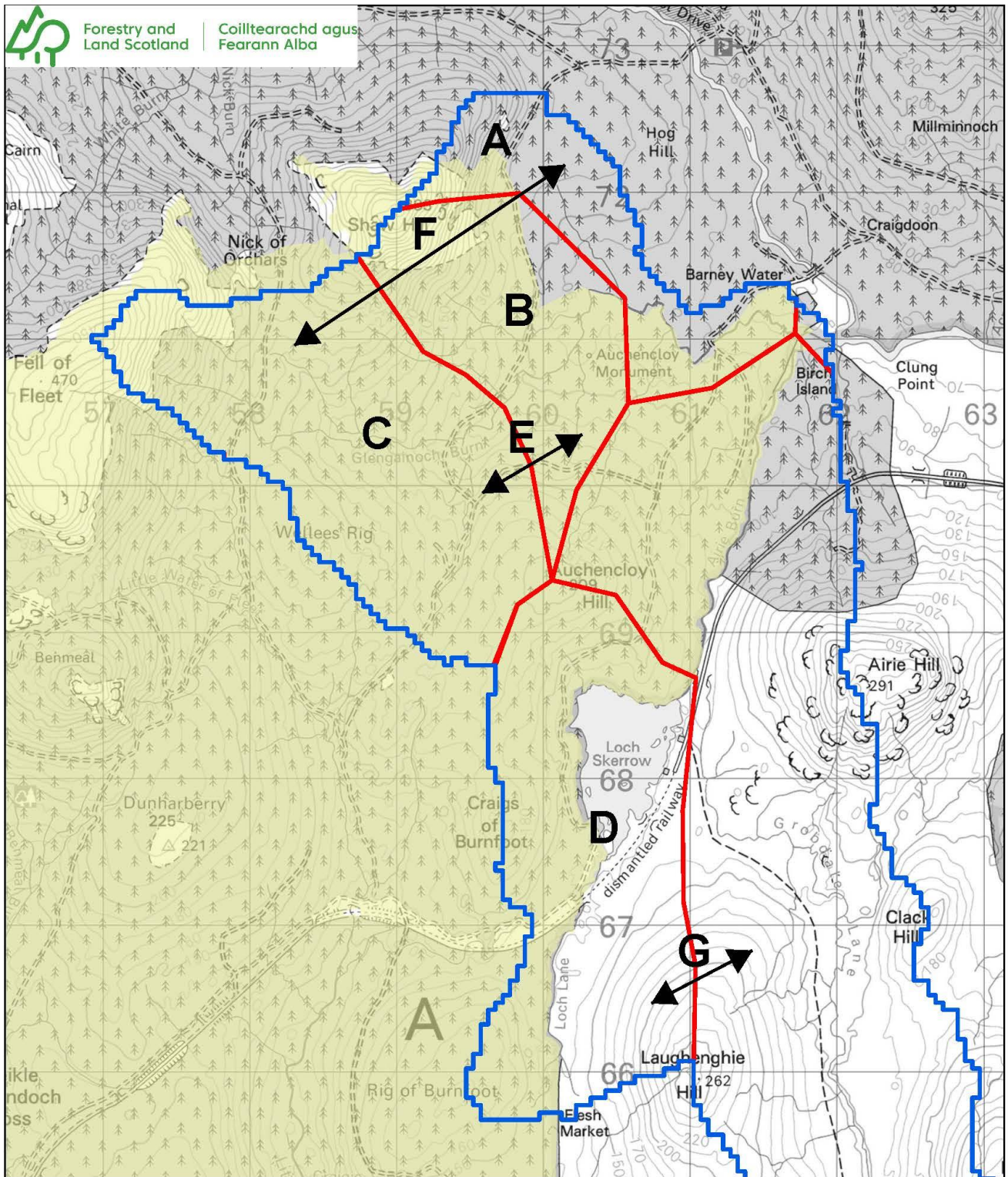
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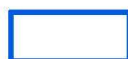

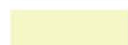


Map iv
Airie Burn sub-catchments

Scale @ A3: 1:24,000

Date: March 2023

Legend

-  Catchment boundary
-  Sub-catchment boundary
-  Fleet Basin block

0 0.175 0.35 0.7 1.05 1.4 km



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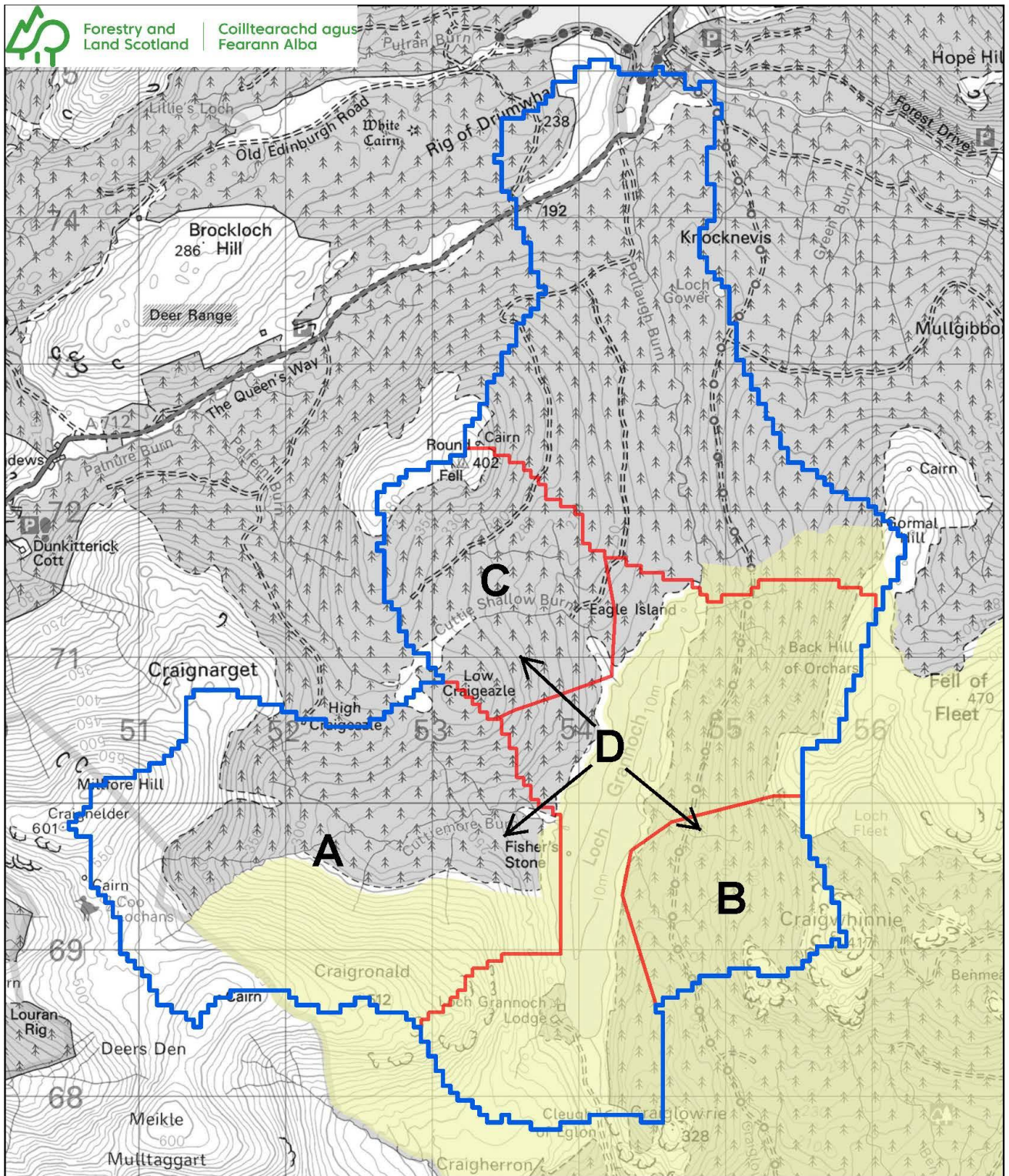
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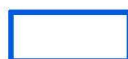

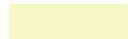


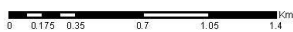
Map v
Pullaugh Burn sub-catchments

Scale @ A3: 1:24,000

Date: March 2023

Legend

-  Catchment boundary
-  Sub-catchment boundary
-  Fleet Basin block



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