

Catterline, April 25th 2019

Slope restoration with soil and water bioengineering techniques in Catterline

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University for the Common Good



OPERANDUM

OPEn-air laboRAtoRies for Nature baseD
solUtions to Manage hydro-meteo risks



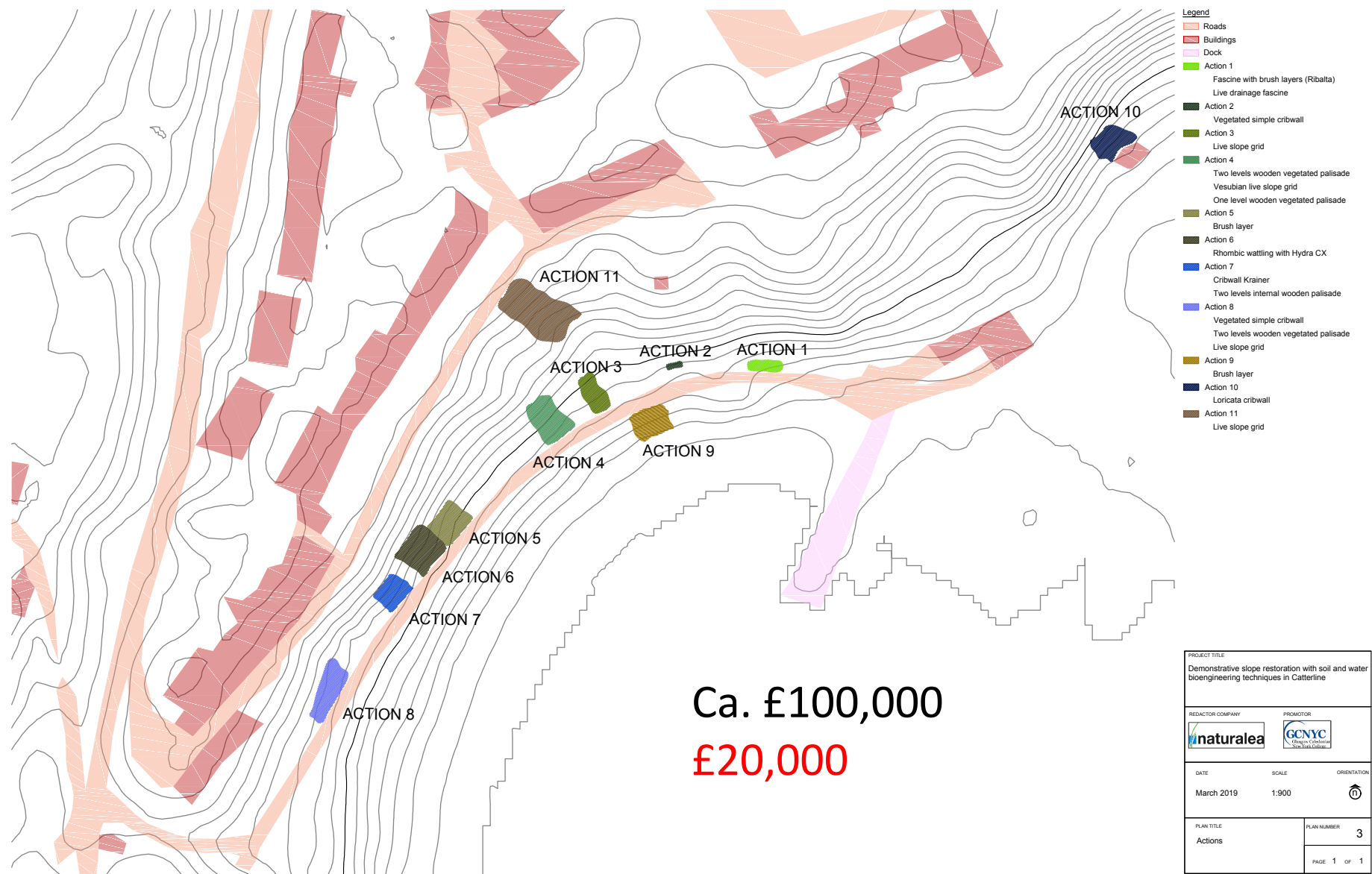
GA 776848

Landslide-prone zones



A. Gonzalez-Ollauri

Potential interventions



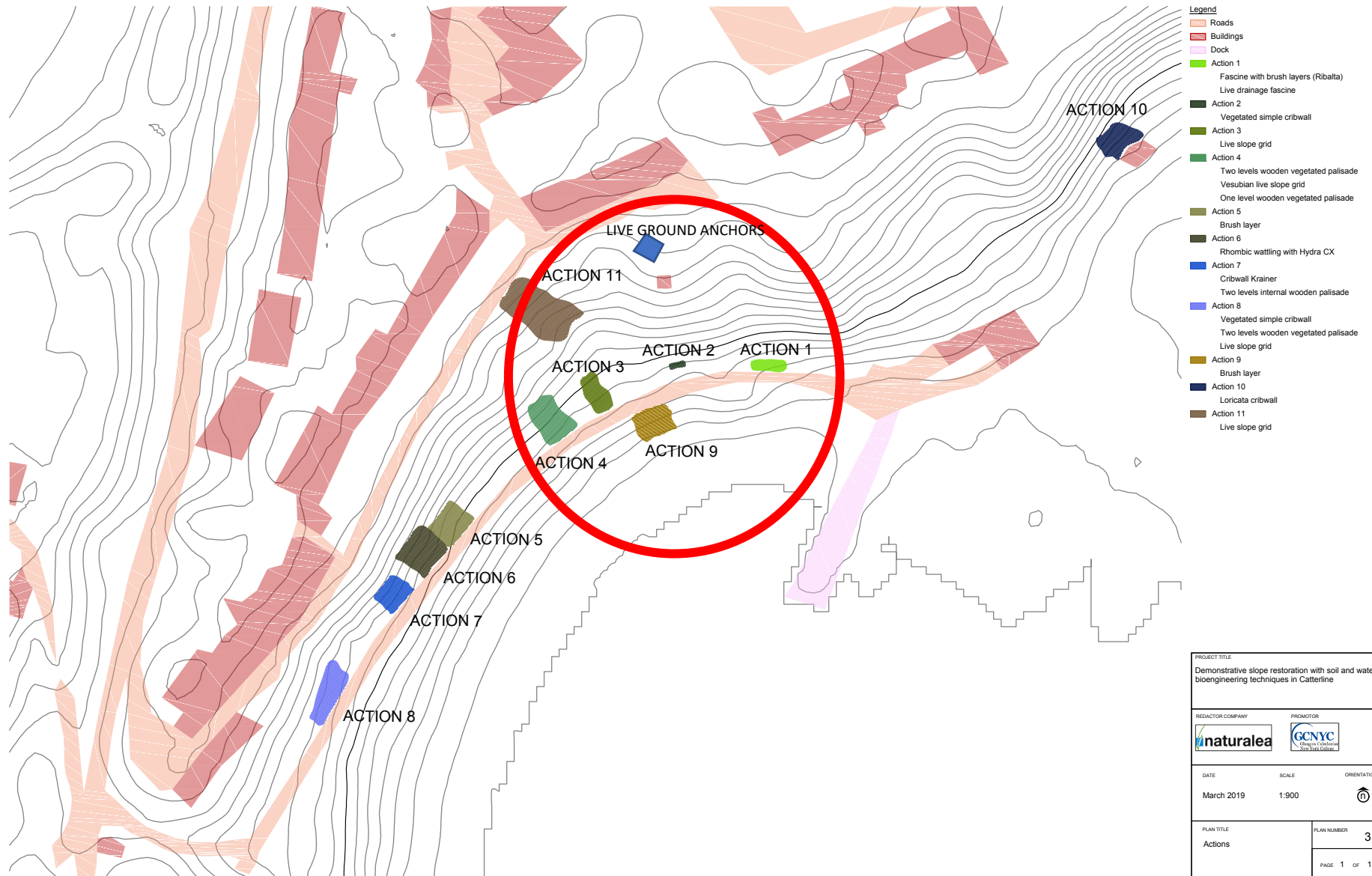
THREE INTERVENTION TIERS

1. Co-deployment (and co-design) -> June 2019
2. Contractor-based (i.e. Salix) -> Winter 2020
3. Open Co-deployment Course-> May/June 2020

FIRST TIER: Co-deployment -> June 2019

Co-deployment of NBS

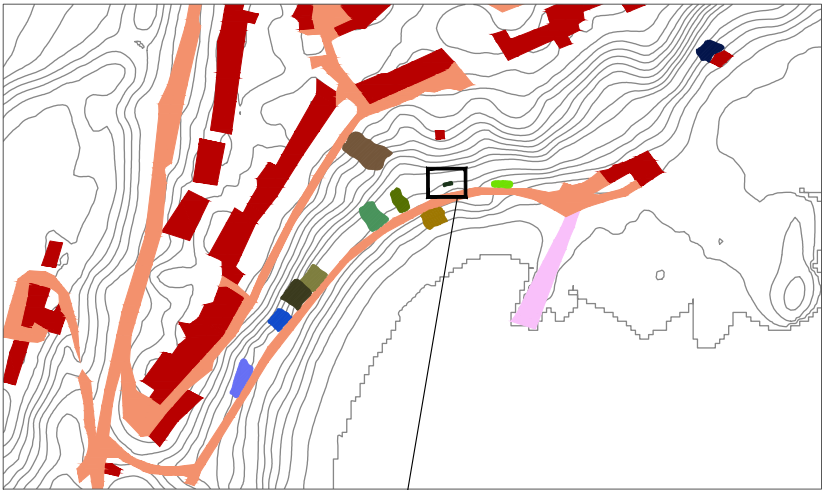
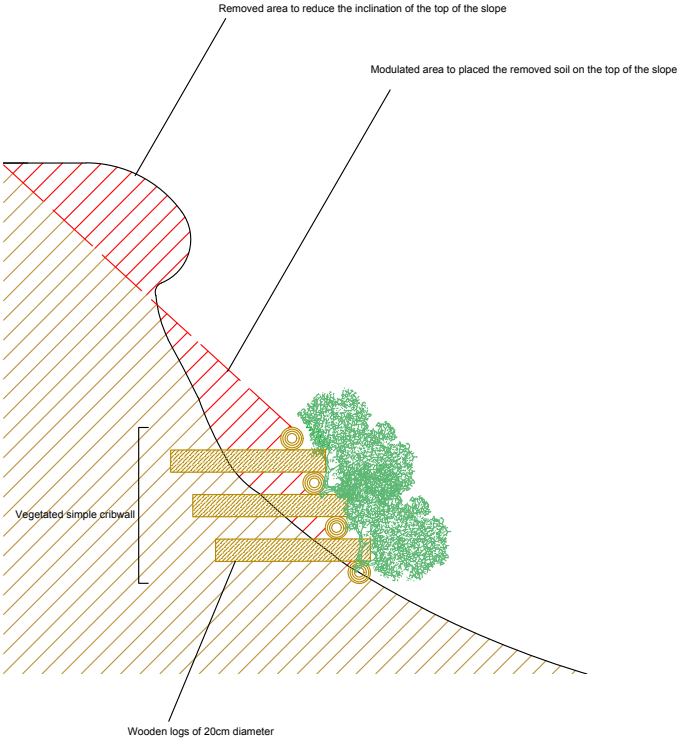







Action 2: live cribwall

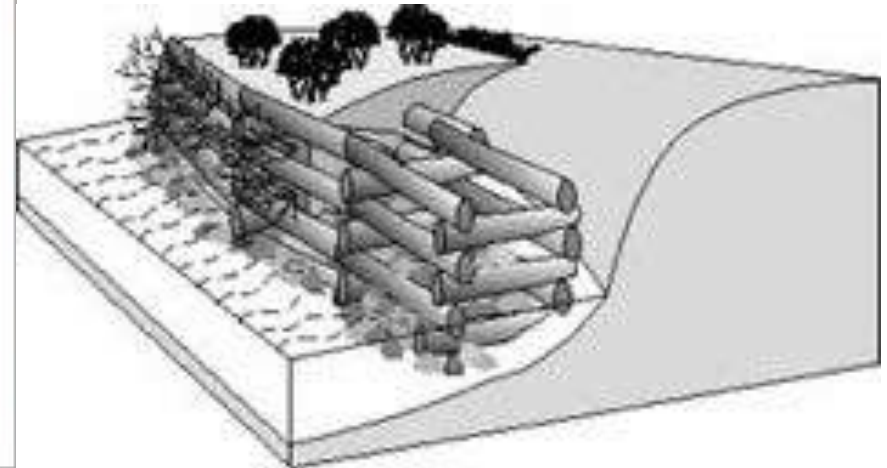
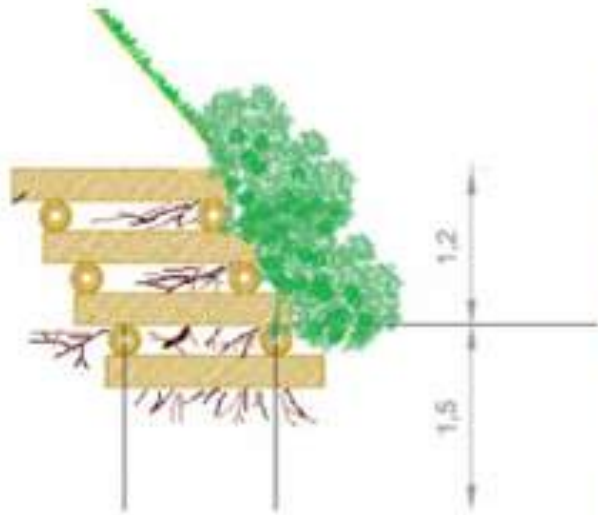


Vegetated simple cribwall executed by Naturalea



PROJECT TITLE Demonstrative slope restoration with soil and water bioengineering techniques in Catterline		
REDRACTOR COMPANY 		PROMOTOR 
DATE March 2019	SCALE Details: 1:40 Location: 1:2000	ORIENTATION 
PLAN TITLE Details actions: Action 2	PLAN NUMBER 4	
PAGE 2 OF 11		

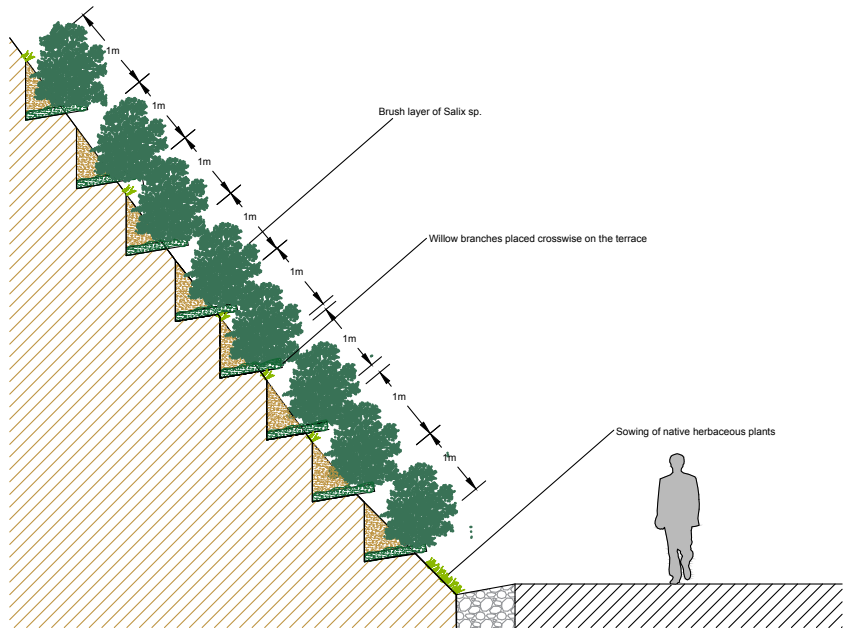
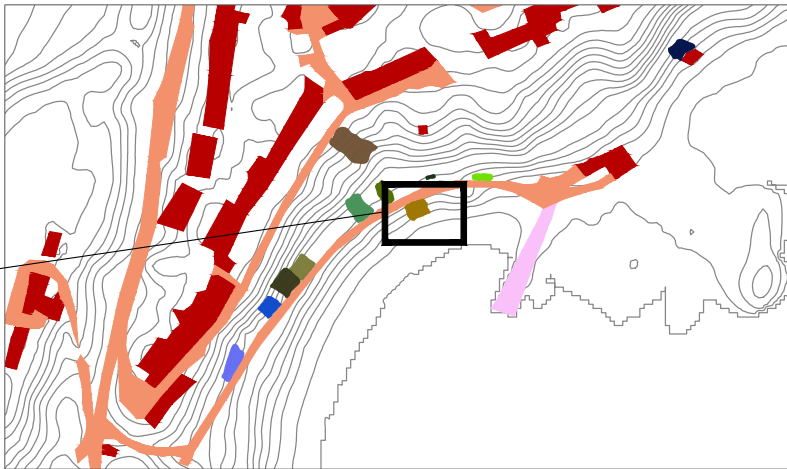
Action 2: live cribwall



Action 9: brush layer

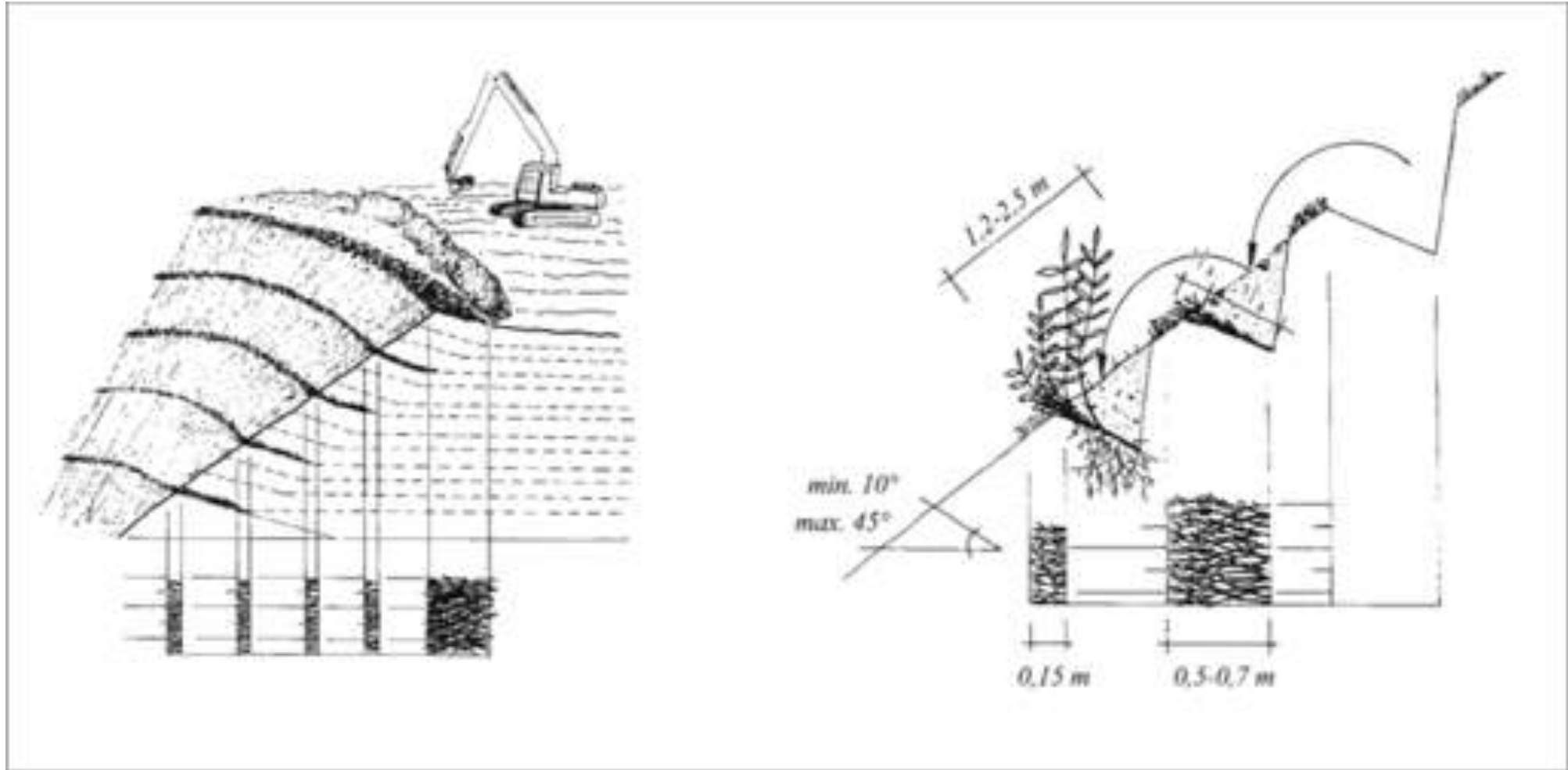


Brush layer: External source



PROJECT TITLE Demonstrative slope restoration with soil and water bioengineering techniques in Catterline		
REDACTOR COMPANY 	PROMOTOR 	
DATE March 2019	SCALE Details: 1:60 Location: 1:2000	ORIENTATION
PLAN TITLE Details actions: Action 9	PLAN NUMBER 4	PAGE 9 OF 11

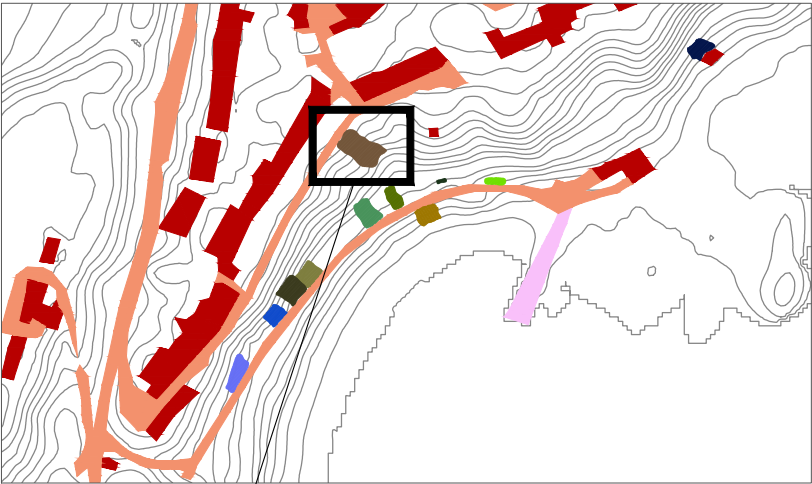
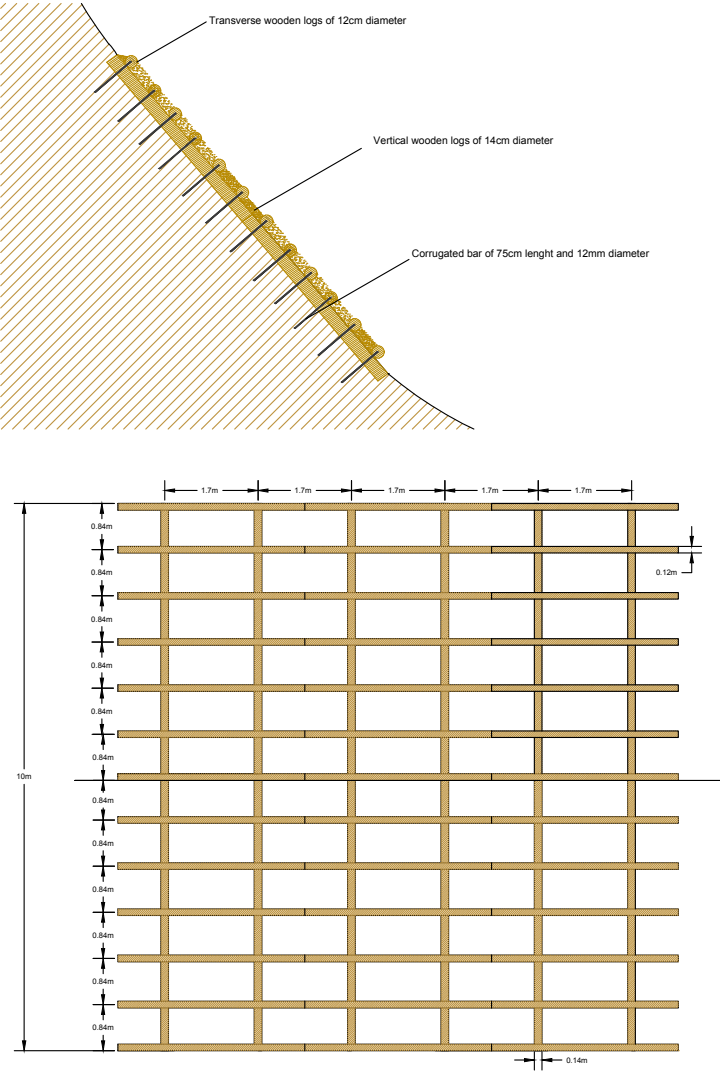
Action 9: brush layer



Action 9: brush layer



Action 11: live lattice

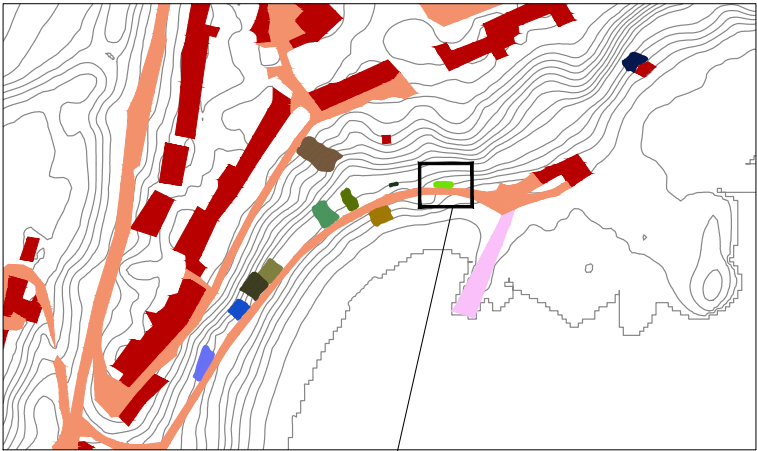
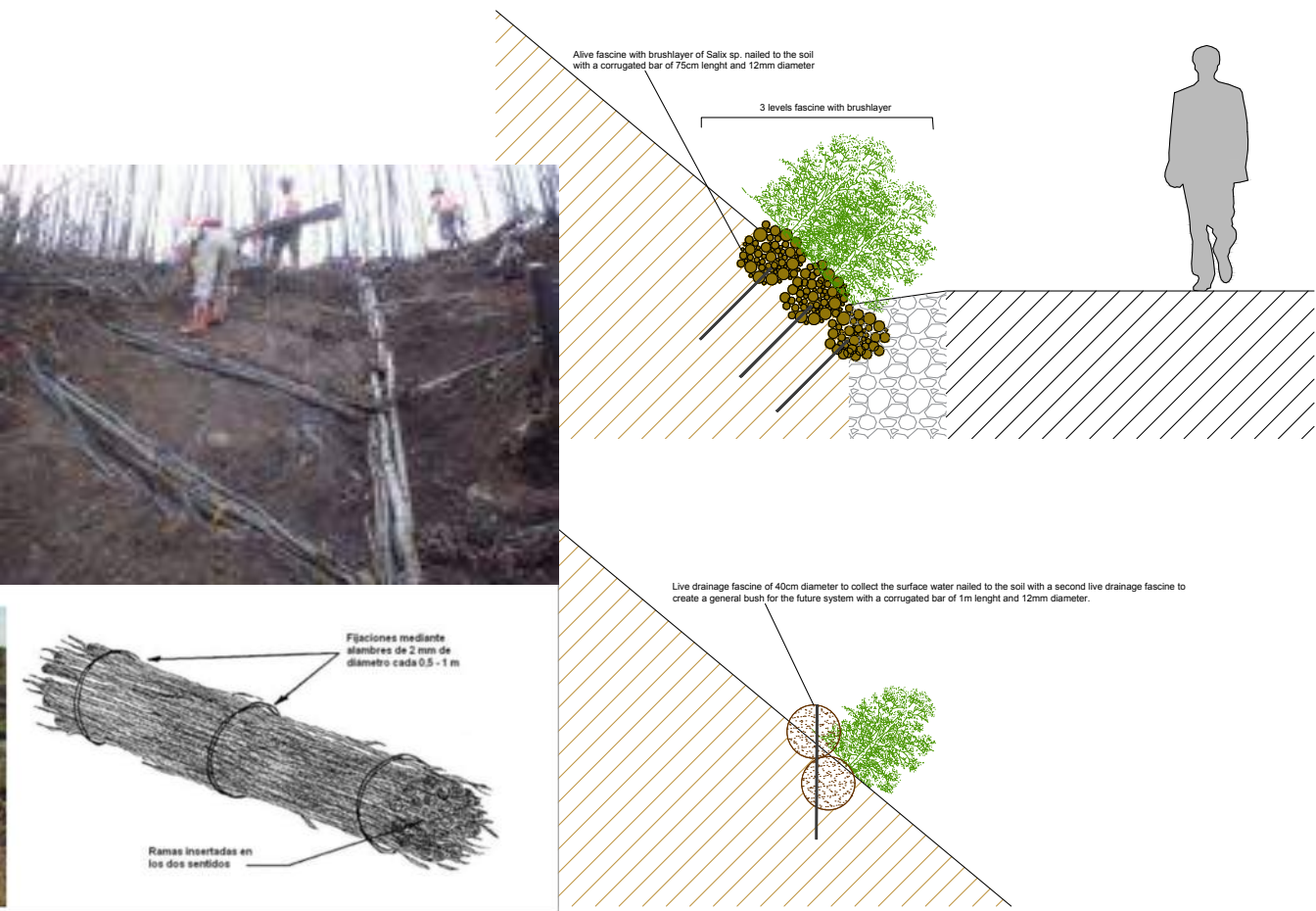


PROJECT TITLE Demonstrative slope restoration with soil and water bioengineering techniques in Catterline		
REDACTOR COMPANY naturalea	PROMOTOR GCNYC Gestión Comunal de Nuevos Yacimientos	
DATE March 2019	SCALE Details: 1:60 Location 1:2000	ORIENTATION
PLAN TITLE Details actions: Action 11	PLAN NUMBER 4	PAGE 11 OF 11

Action 11: live lattice



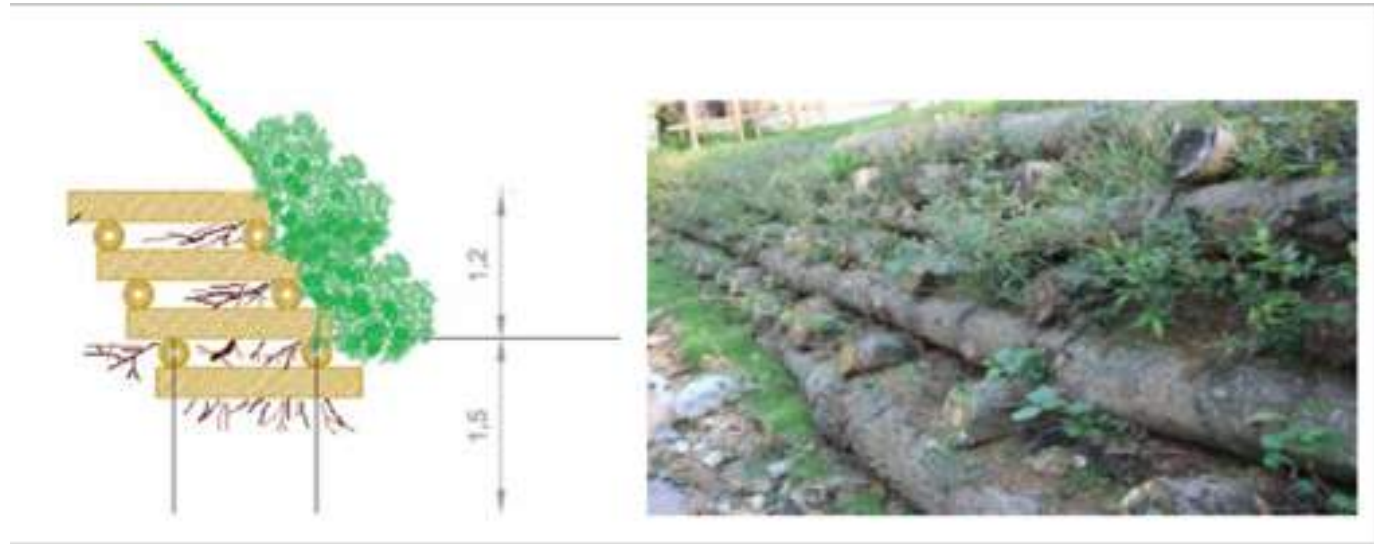
Action 1: live drainage



PROJECT TITLE Demonstrative slope restoration with soil and water bioengineering techniques in Catterline		
REDACTOR COMPANY inaturalea	PROMOTOR GCNYC Gestión Comunal de Nuestro Yacimiento	
DATE March 2019	SCALE Details: 1:30 Location: 1:2000	ORIENTATION
PLAN TITLE Details actions: Action 1	PLAN NUMBER 4	
PAGE 1	OF 11	

What's needed?

Action 2: live cribwall



Item	Units
Peeled pine logs - 1.5 m long and 20 cm diameter	12
Peeled pine logs – 3 m long and 20 cm diameter	6
Logs transport	1
Tree Saplings in 250 cm ³ plant pots	72
Corrugated bars – 0.8 m long and 12 mm diameter	34
HD coir log – 30 cm diameter	18

Action 9: brush layer



Item	Units
Willow branches (in m ³)	16
Tree Saplings in 250 cm ³ plant pots	200

Action 11: live lattice

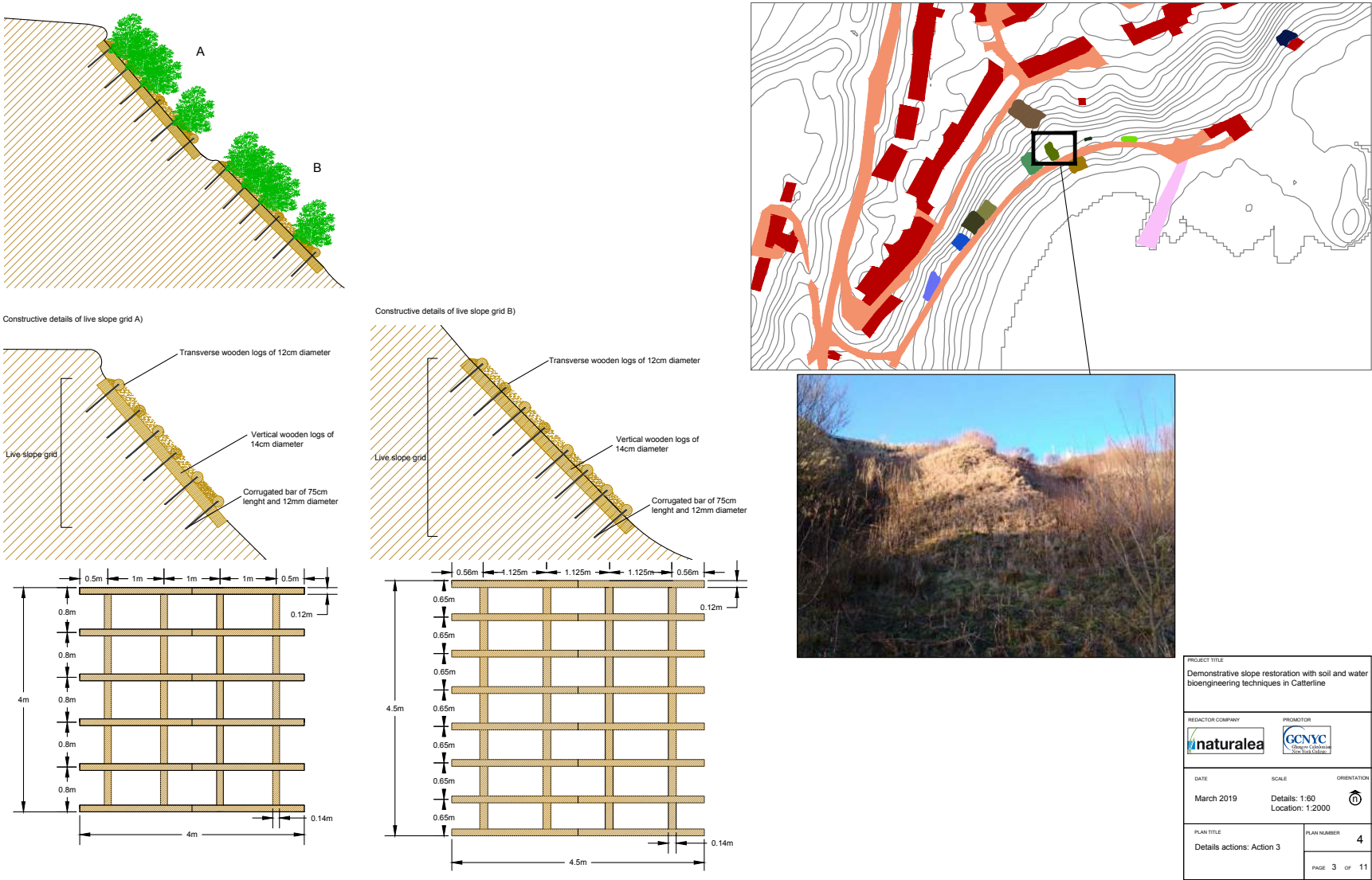


Item	Units
Peeled pine logs - 5 m long and 14-16 cm diameter	12
Peeled pine logs – 2.6 m long and 10-12 cm diameter	42
Logs transport	1
Tree Saplings in 250 cm ³ plant pots	325
Corrugated bars – 0.75 m long and 12 mm diameter	108

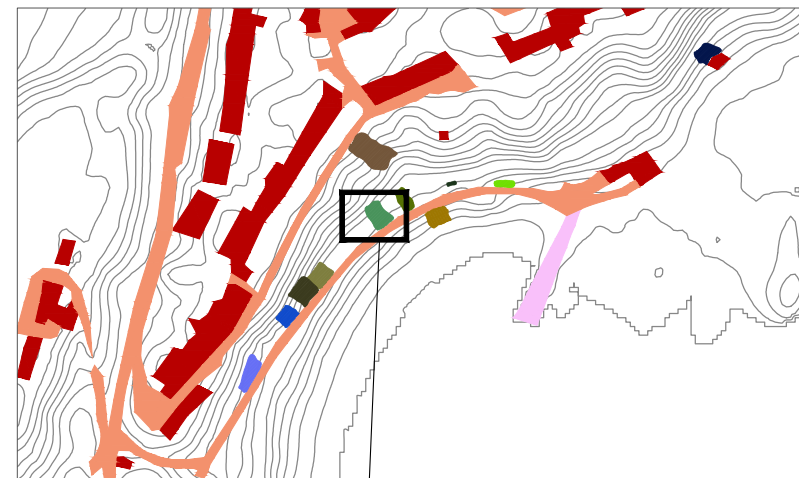
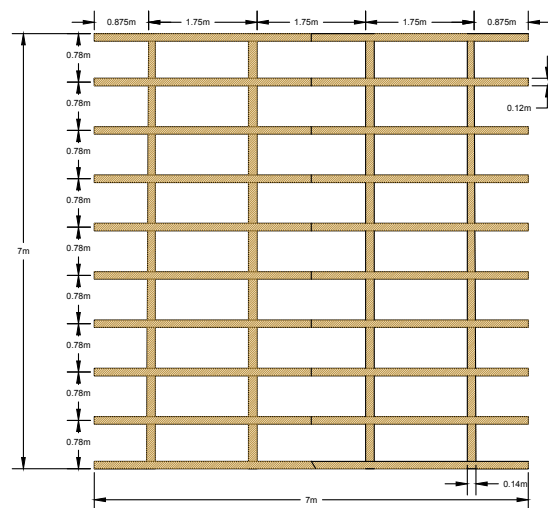
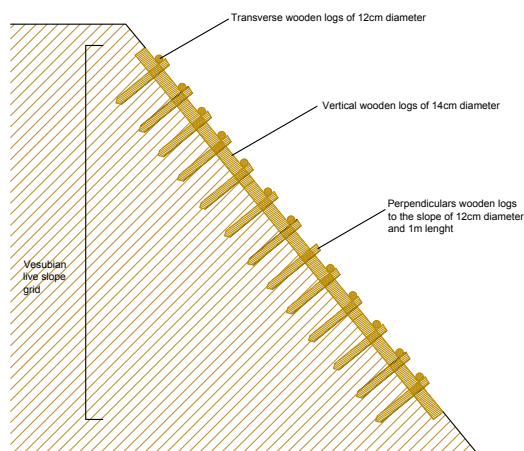
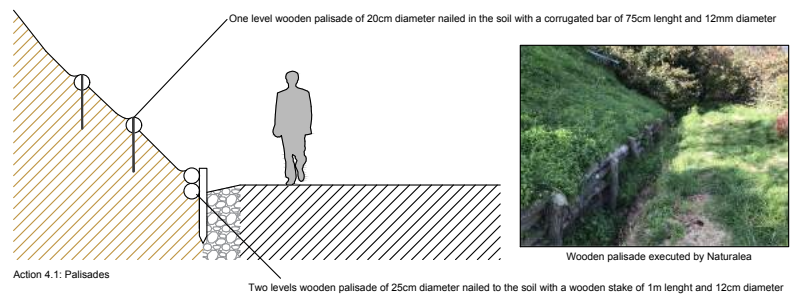
- 15 volunteers – 2 full work days (i.e. Saturday and Sunday)
- Materials sourcing (help ?)
- Plant machine hire – i.e. small excavator (?)
- Hardware – i.e. shovels, spade, trowel, pickaxe, loppers
- Accommodation for 6/7 people
- Tentative dates: June 1st and 2nd // June 22nd and 23rd
- Materials costs (GCU): ca. £6000 (hopefully)
- Technical staff costs -> Naturalea
- Albert Sorolla albertsorolla@naturalea.eu
- Alejandro alejandro.ollauri@gcu.ac.uk

SECOND TIER: Contractor-based (i.e. Salix) -> Late Winter 2020

Action 3: live lattice



Action 4: live palisade + lattice

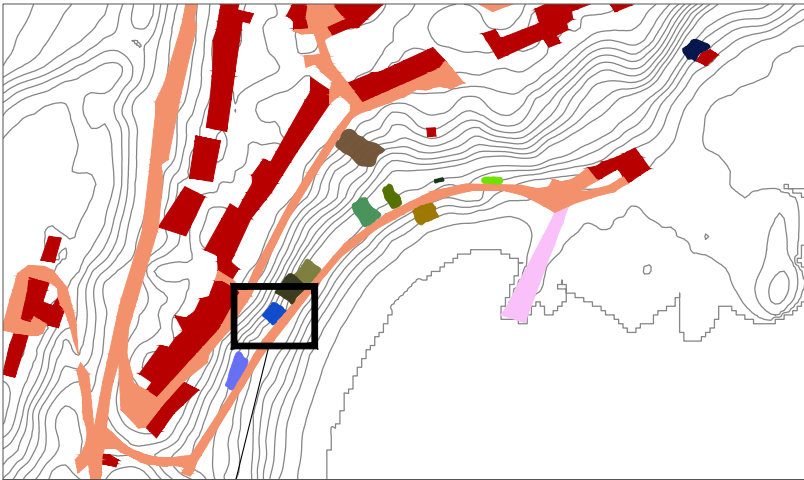
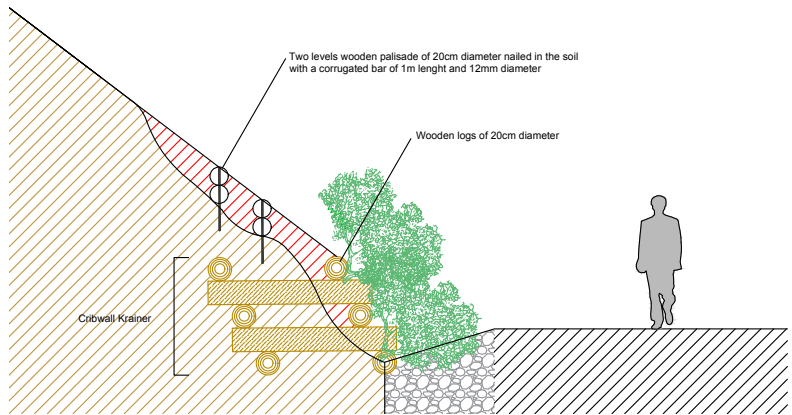


PROJECT TITLE Demonstrative slope restoration with soil and water bioengineering techniques in Catterline		
REDACTOR COMPANY 	PROMOTOR 	
DATE March 2019	SCALE Details: 1:70 Location: 1:2000	ORIENTATION
PLAN TITLE Details actions: Action 4	PLAN NUMBER 4	PAGE 4 OF 11

Action 7: live palisade + cribwall



Cribwall Krainer executed by Naturalea



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DATE March 2019	SCALE Details: 1:60 Location: 1:2000	ORIENTATION
PLAN TITLE Details actions: Action 7	PLAN NUMBER 4	PAGE 7 OF 11

THIRD TIER: Open Co-deployment Course->
May/June 2020

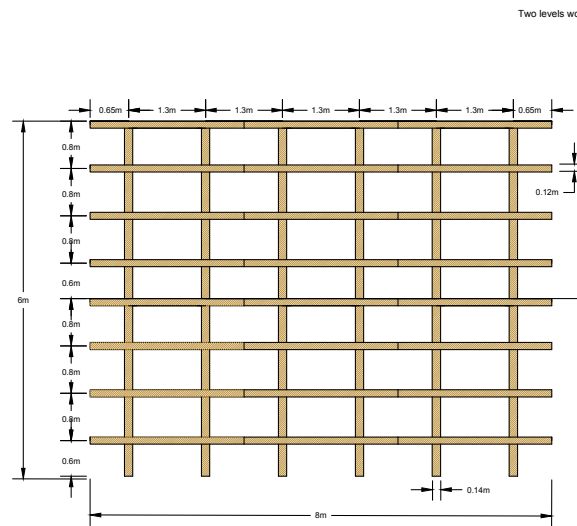
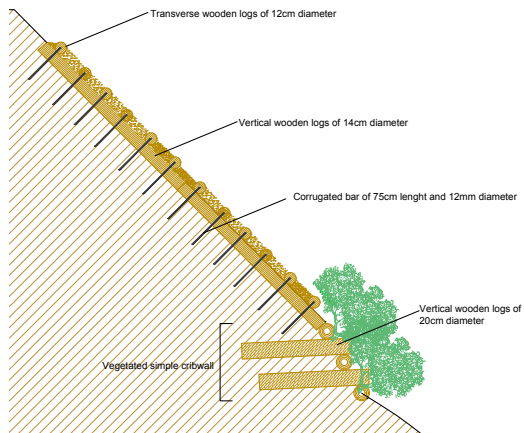
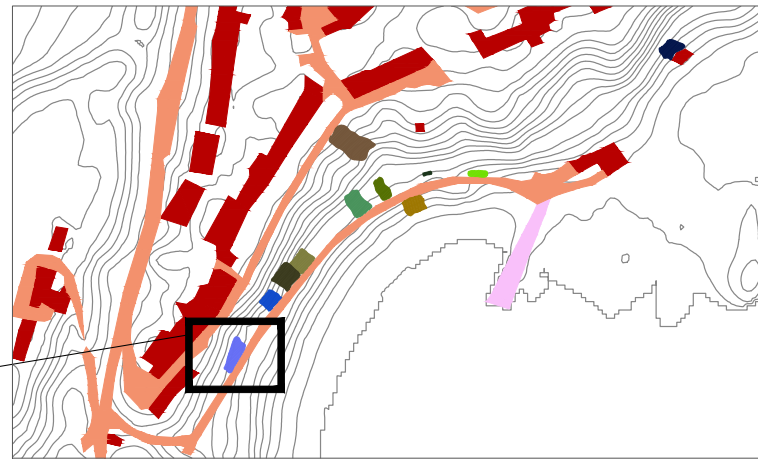
Action 8: live cribwall + lattice



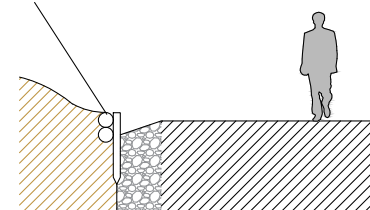
Bottom of the slope



Top of the slope



Two levels wooden palisade of 25cm diameter nailed to the soil with a wooden stake of 1m length and 12cm diameter



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PLAN TITLE Details actions: Action 8	PLAN NUMBER 4	PAGE 8 OF 11

Hands-on work course: theory (1 day) + practice (1.5 days)



Funding? Ca. £16,000

Thank you!