

General information

Project name	Underground Forest Haastrecht-Benschop		
Project code	UGF007		
Remover	Underground Forest		
Location	Haastrecht, Netherlands		
Area	0.22	ha	
Start year	2025		
Duration	>1000	years	Estimated permanence of removal and storage
Holding pool	20%		Freed up when project is implemented

Per project

Baseline TEC	4	tCO2	Above Ground carbon if removed for project
Reference capacity	215	tCO2	Capacity of CO2 storage
LCA emissions	9.32	tCO2	Project related emissions
Storage potential	202	tCO2	Projection -/- baseline

Removal certificates

Holding pool	40		
Potential units issued	162	CRCs	

Field Code	Field name	Size (ha)	Owner	Notes
002	Sleeuwijk	0.2207	Johannes Wilhelmus Benschop	

#	Field code	Field	Year	Date	Sample depth	SOC/AGB
001	002	Sleeuwijk	2020	1-1-2020	-	AGB
003		#REF!	#REF!			
005		#REF!	#REF!			
006		#REF!	#REF!			
007		#REF!	#REF!			
008						
009						
010						
011						
012						

Haastrecht Benschop KML.kml

Year	Above Ground Biomass (Mg/ha)	Carbon (Mg/ha)	CO2 Equivalent (Mg/ha)
2010 	4.155	2.077	7.617
2017 	5.989	2.995	10.980
2018 	9.435	4.717	17.297
2019 	10.411	5.206	19.087
2020 	15.208	7.604	27.881
Average	9.040	4.520	16.573

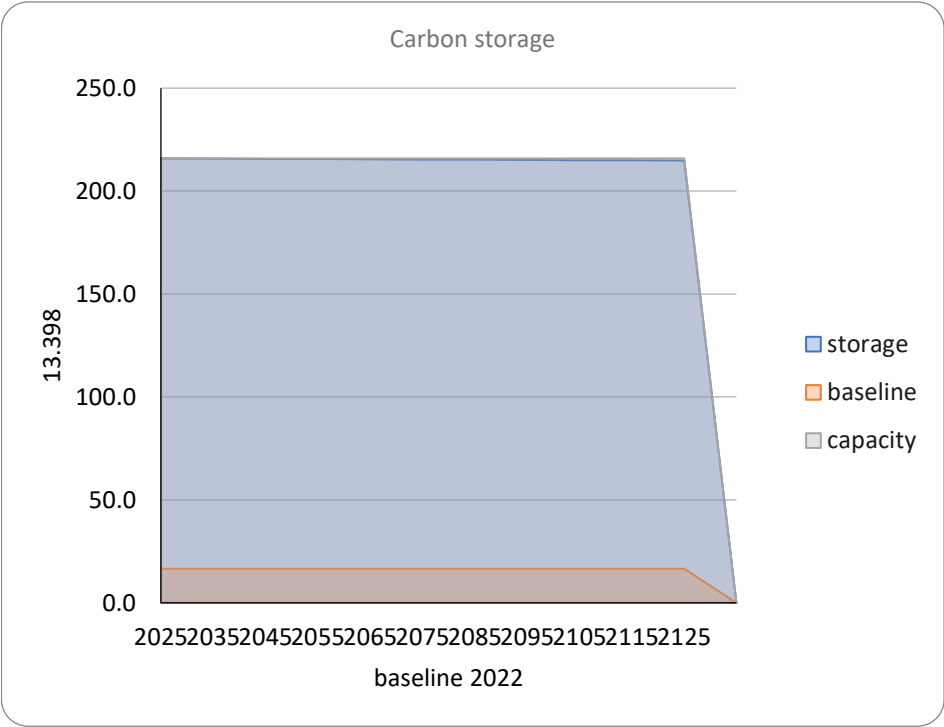
Carbon (g/kg)	AGB (tCO2/ha)	Sample/report nr.	Notes
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-	16.57	ESA	baseline
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Carbon Calculation for UGF007

Surface	0.2207 ha	Fields tab
Baseline AGB	16.57 tCO2e/ha	Measurements tab
Capacity Reference	215.9 tCO2e	References tab

	storage	baseline	capacity
2025	215.9	16.57	216
2035	215.8	16.57	216
2045	215.7	16.57	216
2055	215.5	16.57	216
2065	215.4	16.57	216
2075	215.3	16.57	216
2085	215.2	16.57	216
2095	215.1	16.57	216
2105	215.0	16.57	216
2115	214.9	16.57	216
2125	214.8	16.57	216



Sources

value	source	URL	Notes
CEDA aboveground biomass carbon	https://climate	https://dataceda	2010-2020 data
SOC	A critical review of the conventional SOC to SOM conversion fac		
Density	Wageningen L	https://edepot.w	We've added these soil density le
From C to CO2	3.666666667		

Yearly degradation 0.00005 <https://www.shr> Klaassen, 2015

Variables	Unit	Source	Corrections
Density of spruce	460 kg/m ³	https://www.wur	https://nmbu.bra
Spruce C content	50.35% C content	https://www.sciencedirect.com/scie	
Wood moisture content	12.70% water content	https://www.sciencedirect.com/scie	
CO2e per m3	753.54 kgCO2/m ³	formula from:	https://opslagco2
Total volume of spruce	286.48 m3		
Total Underground CO2	215.9 tCO2		
Total amount of wood	132 t		

	Number	Pile length (cm)	Pile point (cm)	Volume per pile (m3)
palenplan	175	12	14.0	0.333
	60	13	14	0.376
	94	14	14	0.422
	132	15	14	0.471
	132	16	14	0.523
	60	17	14	0.578
More lengths				

Mean point diameter (cm)	14	14	14	14
Increase per m (cm)	0.80	0.80	0.80	0.80
Pile length	12.0	13.0	14.0	15.0
Mean measurement point	6.000	6.500	7.000	7.500
Mean diameter	0.188	0.192	0.196	0.200
Volume pile	0.333	0.376	0.422	0.471
Piles per m3	3.002	2.657	2.367	2.122

tor (Geoderma,Volume 156, Issues 3–4, 15 May 2010, Pages 75-83)
ævels to the calculation factors tab

<https://www.agriculturejournals.cz/pdfs/jfs/2007/03/05.pdf>
ence/article/pii/S0378112720310987
ence/article/pii/S0378112720310987
inhout.nl/motivatien#:~:text=Hout%2C%20afhankelijk%20van%20de%20soort,stoffen%20(2%2D15%25)

Volume sum
(m3)
58
23
40
62
69
35

14	14
0.80	0.80
16.0	17.0
8.000	8.500
0.204	0.208
0.523	0.578
1.912	1.731

Total emissions	9.32 tCO2
emissions forestry	3.18 tCO2
emissions transport	2.97 tCO2
emissions piling	3.17 tCO2

Emissions forestry

Wood production emission: 11.1 kgCO2/m3 <https://www.storaenso.com/-/med>

Emission pile driving

	3168 kgCO2	
Hours per day	8 hr/day	
Piles per day	110 piles/day	
Piles project	653 piles	
Days of work	6	6 days
w2w emissions (diesel)	3.2 kgCo2/l	
2t2 bensine	2.7 kgCo2/l	

Distance 47.9 km Middenweg 7, 4225 SK Noorc

Per project

Lowboy		
Lowyboy per km	0.5 l/km	
Diesel usage	47.9 l	153.28 kgCO2

per dag

Bus per km	0.07 /km	
Amount of days	6 days	
Bensin usage	38.32 l	629.98 kgCO2

Diesel per hour	4 diesel/hour	
Per day	32 l/dag	102.4 kgCO2
Chainsay	1 l/u	
Hours per day	1 hr/day	
Usage per day	1 hr/day	2.74 kgCO2

Per pile

Piles per hour	13.75 piles/hr	
Pile driver	15 diesel/hr	
Diesel per pile	1.09 diesel/pile	
Amount of machines	1 machines	
Usage per pile	1.09 l/pile	2279.56 kgCO2

[ia/documents/download-center/certificates/wood-products-approvals-and-certificates/epd/stora-enso-epd-kvh-](#)

Transport emission 2972 kgCO2

Manhay distance	267	km	Rue du Vicinal 2, Manhay
Empty outward trip	1.5	km	Hoenkoopse Buurtweg 101 , Haastrecht
Total	400.5	km	
Usage truck	3.45	km/l	
Usage diesel	116	l/rit	
Amount per trip	38	m ³	
Trips	7.5		
Trip rounded	8.0		
Total usage	929	l diesel	

fixed values
calculated fields
variable Rene
info transporter
info UF
fixed rene
fixed transport