# Mapping and estimation of Carbon Stock of Roadside Woody Vegetation along Roadways in Eastern Overijssel, the Netherlands

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By

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# Abstract

Despite the growing evidence of the effect of roadside wood vegetation on carbon storage, few studies have been carried out especially at local level in most countries. Roadside vegetation serves many ecosystem values, such as, increase in biodiversity, aesthetic value, and carbon sequestration and stock. With the increasing emission levels of Green House Gases (GHG) globally, there is need to explore the carbon potential of non-notified forests like roadside woody vegetation. The aim of this study was to contribute to a better understanding of roadside wood vegetation species biodiversity and to assess the carbon stock potential of roadside wood vegetation. The research was undertaken in Eastern Overijssel province, the Netherlands. A total of 92 sample plots were collected and analyzed using optical imagery and 14 species were identified. The dominant species in the area were *Quercus robur* and *Quercus rubra,* which corresponds to nearly two thirds of all sampled trees. A half of the area along expressways was available for conversion to ecological corridors. The main road land had almost 2/3 of its land available for conversion, but only 1/5 was recommended as potential ecological corridors. Scenario analysis revealed that selective tree planting does not necessarily decrease the carbon stock of roadside vegetation, but selecting one species can lead to less biodiversity. Generally the carbon stock estimates from the study were overestimated due to site conditions and underestimation of the study area size. Better results could be obtained by not estimating by area, but rather by carbon per kilometer of roadway; furthermore, by availing better information (or studies) to further help in accurately assessing the growth conditions of trees along roads.

**Key Words:** Roadside vegetation, carbon, scenario analysis, ecological corridor, Overijssel

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# List of Acronyms

| | |
|---|---|
| AGB | Above Ground Biomass |
| $CO_2$ | Carbon dioxide |
| DBH | Diameter at Breast Height |
| GE | Google Earth |
| GHG | Green House Gas |
| GPS | Global positioning system |
| Gt | Giga ton |
| ha | Hectare |
| km | Kilometer |
| m | Meter |
| LULUCF | Land Use, Land-Use Change and Forestry |
| TOF | Trees outside of forest |
| UNFCCC | United Nations Framework Convention on Climate Change |

# 1. Introduction

## 1.1 Carbon dioxide

Carbon dioxide ($CO_2$) is one of the more plentiful Green House Gases (GHG), causing between 9-26% of the greenhouse effect (Kiehl and Trenberth, 1997). Green house gases trap incoming infrared radiation therefore increasing the Earth's temperature. From 1970-2000, annual global emissions of $CO_2$ have increased from 21 to 38 gigatons (Gt) and contributed 77% of the total anthropogenic GHG emissions in 2004 (Solomon *et al*., 2007). Although climate is influenced by natural and human-induced factors, the "increase in carbon dioxide concentration has been the principal factor causing warming over the past 50 years" (Karl, 2009). The average global temperature has increased by 0.74 °C since 1901. If the increase continues, by the end of the century the temperature could rise an additional 2°C and lead to overwhelming effects (Solomon *et al*., 2007). Impacts caused by climate change, some of which are already taking place, include sea level rise, increased records of floods and droughts, greater intensity of hurricanes, and the decrease of glaciers.

The increased negative effects are attributed to continued anthropogenic $CO_2$ emissions into the atmosphere. The main elements of human intervention are the burning of fossil fuels, deforestation, and land use change. Some of the carbon dioxide emitted into the atmosphere may be absorbed by the oceans and taken up by vegetation with the excess $CO_2$ remaining in the atmosphere (Karl, 2009). Figure 1 depicts the carbon cycle along with the pools and fluxes (carbon is in different elemental forms). The major pools of carbon are the atmosphere, plants, soils, oceans and earth crust as shown in the carbon cycle (Figure 1). As negative impacts of $CO_2$ became obvious, a global response emerged in the form of multilateral agreements such as the Kyoto Protocol under the United Nations Framework Convention on Climate Change (UNFCCC) to reduce and stabilize $CO_2$ emissions. Article 4 of the UNFCCC requires preventing and minimizing climate change by "limiting anthropogenic emissions of greenhouse gases and protecting and enhancing greenhouse gas sinks and reservoirs" (UNFCCC, 1992).

The terrestrial carbon cycle dominated by forest, accounts for approximately 90% of all living terrestrial biomass (Tan *et al*., 2007; Zhao and Zhou, 2005) Through the process of photosynthesis, atmospheric $CO_2$ is sequestered and stored in plant biomass. Carbon sequestration is the process of capturing $CO_2$ from the atmosphere and transferring it "into long-lived pools and keep it stored securely so that it is not immediately re-emitted back to the atmosphere" (Lal *et al*., 2003). The carbon sequestration by terrestrial biomass results in carbon storage of about 80% of the world's terrestrial organic carbon stocks in forest (M.E.A, 2005). The UNFCC and its Kyoto Protocol (Article 3.3 and 3.4) identified forests as potential carbon stores (Brown, 2002). There is a need for C-sequestration and quantification of terrestrial biomass pools especially in non-notified forests such as roadside woody vegetation. Further scrutinizing on existing estimates and improving on a specific part, particularly trees outside of forest (TOF) of this terrestrial C-pool, might improve on current carbon stock estimates.

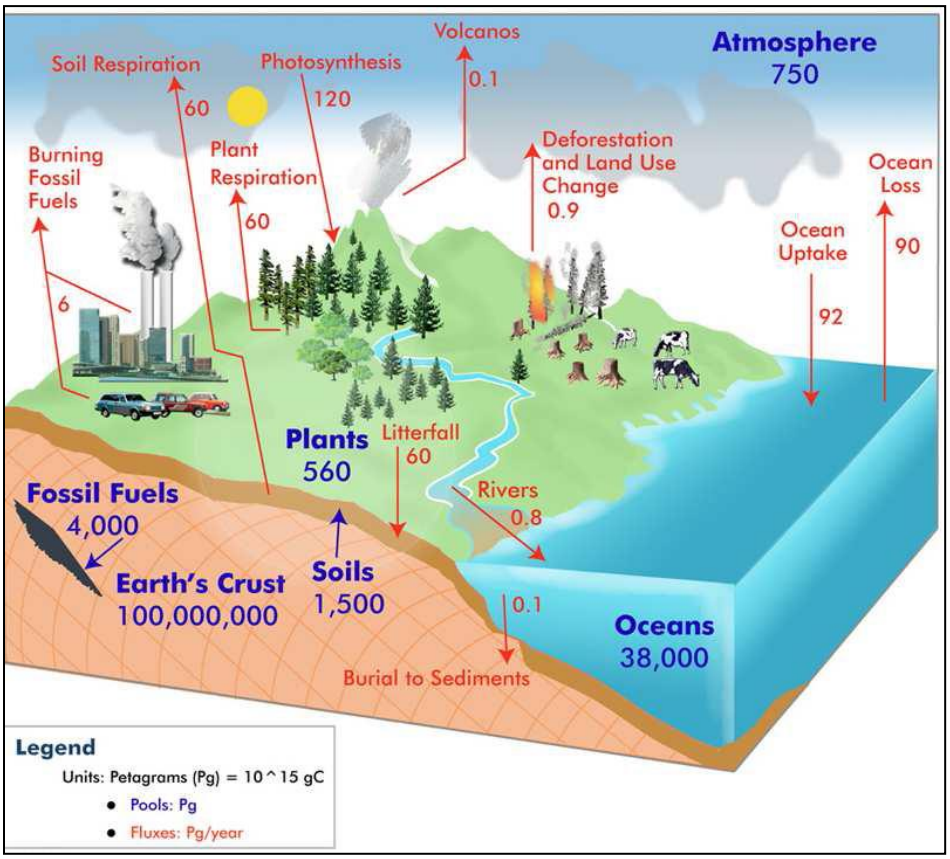


**Figure 1:** Global Carbon Cycle showing pools and fluxes of carbon in Petagrams and Petagrams/year, respectively
*(*Source: *http://www.globe.gov/fsl/eventsimages/CCdiagram-Print.jpg*)

Trees outside forests are "trees on land not defined as forest and other wooded land (FAO, 1998; Finnish Forest Research Institute, 1996). Trees outside forests comprise tree formations ranging from single discrete trees to systematically managed trees in agro-forestry systems (Kleinn, 2000). “TOF includes: trees on land that fulfill the requirements of forest and other wooded land except that the area is less than 0.5 ha; trees able to reach a height of at least 5 m at maturity *in situ* where the stocking level is below 5 percent; trees not able to reach a height of 5 m at maturity *in situ* where the stocking level is below 20 percent; scattered trees in permanent meadows and pastures; permanent tree crops such as fruit-trees and coconuts; trees in parks and gardens, around buildings and in lines along streets, roads, railways, rivers, streams and canals; trees in shelterbelts of less than 20 m width and 0.5 ha area” (FAO, 2001).

Trees outside forests serve many ecosystem values, such as, increase in biodiversity, aesthetic value, and carbon sequestration and stock (Bellefontaine et al., 2002). Policy-makers, planners, and managers increasingly recognize trees outside the forest as an essential component of sustainable development (Kleinn, 1999). Roadside woody vegetation in particular as one of the TOF components, serves a number of ecological functions. Currently, roadside vegetation ecosystem services are more adapted for aesthetic pleasure, biodiversity, and safety in most countries. However, little recognition has been given to TOF in natural resources assessments and inventories, particularly for large areas, and it is only recently that this topic has emerged as a significant research issue (Kleinn, 2000). One classification of TOF is roadside woody vegetation that could further help in accurately assessing an area’s natural resource.

## 1.2 Roadside woody vegetation

Many nations, including the Netherlands, plant trees along roadsides shortly after the construction of the road. Intensive costly management commonly maintains roadsides as open grass areas for drive visibility and errant vehicles (Forman and McDonald, 2007). There is some evidence presented for an alternative strategy of using woody vegetation extensively, but carefully, in roadsides (Forman and McDonald, 2007). Woody roadside vegetation of various types offers many values for transportation, ecology, and society: ranging from increased wildlife habitat and highway safety to visual quality, aquatic ecosystems, and carbon-sequestration benefits (Aanen et al., 1991; Forman et al., 2003; Van Bohemen, 2005). An often-overlooked characteristic of roadside wood vegetation is a habitat for many species especially rare native species (Forman and McDonald, 2007). These are usually plants adapted to relatively open ecosystems like prairies or savannas, and are normally located in the outer roadside portion with less soil alteration (Forman and McDonald, 2007). Vehicles often transport seeds along the road (Forman and McDonald, 2007). In addition, wind and wildlife also moves seeds along the corridor (Forman and McDonald, 2007). Rare species and rare natural communities on roadsides are of particular conservation importance in landscapes of intensive human use, such as certain agricultural and built areas (Forman et al., 2003). At least nine roadsides in the United Kingdom are designated as protected natural areas, and roadside management in the Netherlands especially protects rare species and natural communities on certain scarce sandy roadsides (Forman and McDonald, 2007). Shrubs and trees in distinctive combinations are no solution, but when carefully meshed with grassy areas along highways, they offer many more opportunities and benefits than shortcomings (Forman and McDonald, 2007). Increased carbon sequestration could be one of the potential benefits. However, according to (Forman, 2005), roadside wood vegetation also has some disadvantages. Examples include:

- an increase in animals crossing roads could lead to an increase in road kill rates
- driver visibility around a curve in the road can also reduce
- with less water runoff in shrub-lined shallow ditches, water may saturate a roadbed, causing roadbed failure and or road surface degradation
- in droughts or dry areas, reduced ditch-water flow could contribute to lowering nearby stream and pond levels

## 1.3 Current management of roadsides in the Netherlands

In the Netherlands, Rijkwaterstraat, the implementing body of the Ministry of Transport and Water, currently manages roadside vegetation along expressways. The width of the roadside verge is often narrow depending upon the purpose of the roadway. Along the expressways, the verge is wider due to increased speeds of vehicles. Due to the higher speeds, no tree greater than 8cm in diameter is allowed within 10 meters of the edge of the expressway. “Safety is always first” (Hollander, 2009). Furthermore, trees located behind safety rails are maintained and trimmed to ensure safety for motorists stuck on the side of the road along with other measurements to insure motorist’s safety. The plan currently implemented by Rijkwaterstraat is the “Greenness Plan.” The aim of the greenness management plan is efficient, targeted, systematic, and ongoing management greenness (Sheerder and Tummers, 2008). The greenness plan does not just refer to the vegetation along the roadways, but as well as the aesthetic values of the landscape. The greenness management plan covers five to ten years and has been based on landscape plans and management vision. Landscape plans and management visions takes into account safety issues, ecological issues, such as biodiversity and threatened species, and restrictions by law (Sheerder and Tummers, 2008). After complying with restrictions, the general approach is to fit the greenness plan into the present landscape (Sheerder and Tummers, 2008). For example, if the verge is beside an open agrarian land use then the existing vegetation should remain low. The general standard for constructing and maintaining roadside vegetation is to best implement the landscape that existed before the road was built or to blend the roadside vegetation with the existing landscape (Hollander, 2009). Furthermore, the verge along roadways is property of the Dutch government or local municipalities. The primary purpose of roadside vegetation is to hold soil in place without creating hazards (Hollander, 2009). However, the roadside vegetation can further be used as potential ecological corridors.

Therefore, the main aim of this research was to identify the species composition of roadside woody vegetation and map its carbon stocks as an additional ecosystem function besides space for road safety, biodiversity, and landscape beauty in eastern portion of the Province of Overijssel. Roadside woody vegetation was defined as trees and shrubs that are growing on the roadside verges in this study.

### 1.4 Woody vegetation mapping techniques

According to (Kuhnell *et al*., 1998), there are two components to mapping woody vegetation cover from satellite imagery. One is the initial separation of woodland and forest from other land cover types, and the second is to estimate tree density (or canopy cover) within wooded areas (Kuhnell *et al*., 1998). Some commonly used classification methods such as supervised and unsupervised classification simply delineate wooded areas (possibly including a few broad species and density classes), while others such as spectral unmixing and vegetation indices are capable of estimating a range of canopy cover amounts (Kuhnell *et al*., 1998). One problem with supervised and unsupervised classification is that they are not necessarily repeatable over time and space due to different seasonal conditions and variations in soil/vegetation communities, making class labeling very dependent on the analysts' knowledge of the area.

Remote sensing has been recognized as a very useful technique used in mapping woody vegetation(Pettorelli et al., 2006; Salem et al., 2009; Youssef and Ghallab, 2007). It provides important coverage, mapping and classification of land cover features, such as vegetation, soil and water. Youssef and Ghallab (2007), confirm the reliability of remote sensing in monitoring, mapping, infrastructure assessment & sustainable development in general. One of the primary applications of remote sensing is to identify patterns of vegetation distribution on the ground and to assess changes in vegetation over time (Salem *et al*., 2009). Regarding vegetation distribution on the ground and assessing its changes with time, remote sensing mapping has also proved to have many advantages over the other traditional methods (Salem *et al*., 2009). Classifying vegetation with the use of remote sensing is a valuable tool to determine vegetation occurrence and distribution (Salem *et al*., 2009). However, in moderate resolution imagery, such as SPOT or Landsat Thematic Mapper (TM), linear features such as roads are often narrower than the spatial resolution of the satellite (Quackenbush, 2004). This sub-pixel problem was described by Hemmer (1996), as one of the complicating factors in extracting linear features using imagery from the satellite sensors. The pixels are often larger than the linear features to be identified. However, the improvements in spatial resolution provide the potential for automatically defining linear features that were previously unattainable (Penn and Livo, 2002).

### 1.5 Classification of landscape features

According to (Aksoy *et al*., 2009) classification of land cover has traditionally been performed using pixel level processing with mainly statistical tools in a multi-class setting. These multi-class classifiers need example patterns for each class to estimate decision boundaries in the feature space during training (Aksoy *et al*., 2009). However, in real world classification problems, sampling a sufficient number of training data from each of the classes is not always possible (Aksoy *et al*., 2009). Since these classifiers require complete descriptions of all classes, they may not generalize well with a sufficiently high accuracy for a large number of classes, especially when some of them have large variations in appearance (Aksoy *et al*., 2009). Therefore, delineation of individual trees or tree groups is not necessarily very accurate when the goal is to classify the whole land cover (Aksoy *et al*., 2009). Traditional methods used for classification typically use confusion matrices for expressing accuracy (Quackenbush, 2004).

Popular techniques for linear feature detection in images include; mathematical morphology, Hough transform, multi-resolution edge detection, template matching, dynamic programming for edge linking, and rule-based classification (Quackenbush, 2004). Such techniques have been applied to the extraction of roads (Tupin *et al*., 1998), buildings (Mayer, 1999) and water channels (Onana *et al*., 2003). However, these techniques are not always applicable when detecting linear strips of woody vegetation (Aksoy *et al*., 2009). In addition, "rural linear features such as hedgerows often exhibit directional variation according to whether they follow natural boundaries such as streams and rivers or human-made linear objects such as roads, or they have been planted as separators between agricultural fields"(Aksoy et al., 2009; Thornton et al., 2007). Several studies for the analysis of hedgerows (type of linear woody vegetation) concentrate mainly on the functional categorization of hedgerows and their development in time where mapping is already known or is done by manual photo-interpretation (Quackenbush, 2004; Thenail and Baudry, 2004). The target objects of interest in this study are linear strips of woody vegetation along roadways and expressways. They are important biological and ecological components of the environment where they serve many functions including providing field boundaries, animal habitats, windbreaks, erosion control, an contributing to landscape ecology and biodiversity (Baudry *et al*., 2000; Thornton *et al*., 2006). With the different functions and composition of TOF, classification systems differ from forest.

## 1.6 Classification of Trees Outside Forests (TOF)

According to (Kleinn, 2000) the development of a classification system for the highly diverse TOF resource is expected to remain an issue in the near future. Yet such a classification is primarily required for the better understanding of the structure and composition of the resource Comprehensive classification schemes have been elaborated in agro-forestry (Nair, 1987; Sinclair, 1999). However, the new generation of high-resolution satellite imagery has potential to allow the identification of single trees (or crowns) and thus holds promise as a data source for large-area TOF inventory. The new 1m resolution satellite sensors represent a possible future alternative to aerial photography (Clark et al., 2004; Holland et al., 2006; Kleinn, 1999). Table 1 shows examples of various TOF classifications according to (Kleinn, 2000).

**Table 1:** Examples of TOF classification

***Source: adapted from (Kleinn, 2000)***

| Classification classes |
|---|
| **1. According to the land use**<br><br>• Trees in urban areas<br>• Trees associated with permanent crops<br>• Trees associated with annual crops<br>• Trees associated with pastures<br>• Trees along "line features" such as property borders, roads, railways, canals, creeks<br>• Tree groups (that do not comply with the area requirements of the forest definition)<br>• Trees on not cultivated/not managed lands (parts of savannah land, mountainous regions, peatlands) |
| **2. According to geometrical formation**<br><br>Little or no direct inter-tree interactions:<br><br>• Isolated scattered trees |
| **3. Zoned, exhibiting a more or less clear shape**<br><br>• Trees in lines<br>• Groups of trees |

For field measurement of TOF, sampling arrangements designed for forest stands may not be the most effective arrangements for trees (FAO, 2001). As for the measurement of tree characteristics, only a limited set of attributes can be measured through remote sensing, and only when the spatial resolution is appropriate (Kleinn, 1999). Crown cover, tree density and spatial arrangement of trees (or better yet, crowns) can readily be determined if the geometric resolution of the image allows it (Bunting and Lucas, 2006; Kleinn, 1999). “Other important attributes such as species and stem and crown dimensions are more reliably observed in the field, and non-biophysical variables such as ownership and type of tree management can only be observed in the field (Kleinn, 1999).” Other variables that can also be observed in the field include; diameter breast height and average tree height that can be used to estimate biomass and carbon stock among trees.

### 1.7 Biomass and carbon stock estimation techniques in forests

Estimation of biomass of forests is a usual practice to quantify fuel and wood stock and allocate harvestable amounts (Dias et al., 2006). Forest biomass assessment is important for national development planning as well as for scientific studies of ecosystem productivity, carbon budgets, etc (Hall et al., 2006; Parresol, 1999; Zheng et al., 2004). Biomass is defined as "the organic material both above and below the ground, and both living and dead. e.g., trees, crops, grasses, tree litter, roots, *etc.*" (FAO, 1998). According to (Overman et al., 1994) two methods are available for the determination of biomass. One method involves complete harvesting of plots and subsequent extrapolation to a hectare (Klinge and Herrera, 1983; Klinge et al., 1975). The other method aims to construct a functional relationship between tree weight and other tree dimensions such as stem diameter, height and wood density, by means of regression analysis (Saldarriaga et al., 1988). The biomass of a plot is obtained by measuring the tree dimensions for all trees in the plot and calculating the weight of each tree from the calibrated function (Overman et al., 1994).

Above ground biomass, below ground biomass, dead wood, litter, and soil organic matter are the main carbon pools in any forest ecosystem (FAO, 2005; IPCC, 2006). Above ground biomass includes all living biomass above the soil, while below ground biomass includes all biomass of live roots excluding fine roots (< 2mm diameter), (Deo, 2008). Often, only an above ground biomass assessment takes place because these generally account for the greatest fraction of total living biomass in a forest (Brown, 2002). Above ground biomass is defined as the total amount of above ground organic matter in living trees greater than 5 cm diameter at breast height (DBH) and average plot tree height (Brown, 1997; FAO, 2004). Although various methods for biomass estimation have been tested (Overman et al., 1994; Roy and Ravan, 1996), rarely has research successfully been conducted in quantifying biomass content in small areas along roadways and expressways due to the complexity roadside woody vegetation structure especially at a local scale. Most developed above ground biomass and carbon estimation methods mainly focus on forests in general. The good practice guidance (IPCC, 2003) and the guidelines for national greenhouse gas inventories (IPCC, 2006) by IPCC, recommend the selection of and use of species-specific or similar-species allometric equations in the priority order of local to national to global scale. As with biomass estimation, carbon content of tree species can vary from landscape to landscape. Therefore, calculated wood densities of each tree species in a landscape can further the accuracy of estimating carbon stocks of roadside vegetation (Zhang et al., 2009). More so, identification of potential ecological corridors to connect forest patches especially roadside woody vegetation could enhance biomass and carbon stock estimations as well as biodiversity in the future.

## 1.8 Potential ecological corridors with roadside woody vegetation strips or patches

Corridors are defined as "avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas" (Good, 1998). Road managers need information to know what is present on roadsides in particular and the significance of what is present. To minimize impact on this important vegetation, road managers need comprehensive information on the conservation value of roadside vegetation and the locations of sites that are of particularly high importance (Stokes et al., 2006). This is important for road planning and road maintenance purposes from road network planning, management of maintenance contracts, construction project planning to development of environmental programs and strategies (Stokes et al., 2006). Vegetation inventory information, collected using a standard survey methodology, can greatly enhance and support roadside vegetation management planning (Stokes et al., 2006). Proper management of roadsides influences and can support ecosystem functioning. Roadside ecosystem functioning can benefit of management measures such as developing eco-corridors. Some examples of ecological corridors are river valleys (Burkhardt et al., 1996), drove roads (Margules, 1996), tree line forests, riparian forests and forests at the base of large mountains (Peterken et al., 1995), hedgerows, the banks of streams, canals and rivers and roadsides (Lammers and Zadelhoff, 1996), and small ponds, hedgerows and field margins (Felton, 1996). Popular techniques for linear feature detection in images include; mathematical morphology, Hough transform, multi-resolution edge detection, template matching, dynamic programming for edge linking, and rule-based classification (Quackenbush, 2004). Nevertheless, these techniques are not directly applicable to the detection of linear strips of woody vegetation because they assume the existence of collinear and parallel line segments that constitute pairs of edges forming object boundaries (Aksoy et al., 2009). Furthermore, rural linear features such as hedgerows and riparian vegetation often exhibit directional variation according to whether they follow natural boundaries such as streams and rivers or human-made linear objects such as roads, or they have been planted as separators between agricultural fields (Thornton et al., 2007).

The main objective of ecological corridors is to facilitate dispersal and reduce the risk of extinction of a species due to excessive habitat fragmentation and the isolation of small fragmented populations (Good, 1998). The problem of the survival of small isolated populations occurs where these patches become much scarcer and more isolated in the landscape, because of human modification and replacement of natural processes by more uniform land management (Good, 1998). The negative effects of habitat fragmentation may take many years to show their full impact, with species being lost steadily or intermittently over the intervening period (Saunders and Hobbs, 1991).

Ecological corridors are recommended as a solution to the fragmentation of European habitats (Good, 1998). Corridors, and 'stepping stones' (such as ponds or small woods), are currently an important component of European biological conservation strategies (Bennett and Wolters, 1996). All Member States of the EU are required to designate a network of sites (Special Areas of Conservation or SACs) under the Flora, Fauna and Habitats Directive (CEC, 1992). This network of sites is referred to as the Natura 2000 network (CEC, 1992). Article 10 of the Directive specifically refers to linear landscape features and stepping stone habitats:

“Member States shall endeavor, where they consider it necessary, in their land-use planning and development policies and, in particular, with a view to improving the ecological coherence of the Natura 2000 network, to encourage the management of features of the landscape which are of major importance for wild fauna and flora.” Such features as those which, by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems for marking field boundaries) or their function as stepping stones, are essential for the migration, dispersal and genetic exchange of wild species*."* Cited by (Good, 1998).

The concept of a European network of protected areas has been further developed by the Pan-European Biological and Landscape Diversity Strategy, which was endorsed by the European Ministers of the Environment at Sophia in October 1995 (Prillevitz, 1996). The IUCN Action

Plan for protected areas in Europe endorsed this European Ecological Network (EECONET) in 1994 (Bennett and Wolters, 1996). Maps of existing and potential areas of conservation status, including ecological corridors, have been prepared for all EU Member States (Bischoff and Jongman, 1993), and many European countries have produced plans for National Ecological Networks (Kavaliauskas, 1996; Liro, 1995; MANMF, 1990; Peterken et al., 1995). Ecological corridors have however been criticized as failing on both these criteria in many cases where they have been proposed (Bonner, 1994; Simberloff and Cox, 1987; Simberloff et al., 1992).

This research focused on potential roadside corridors, which can vary from a 5m wide roadside strip (Keals and Majer, 1991), to a kilometer-wide landscape (Felton, 1996). An ecological corridor was defined as a linear landscape feature in this study (Figure 2). Once all

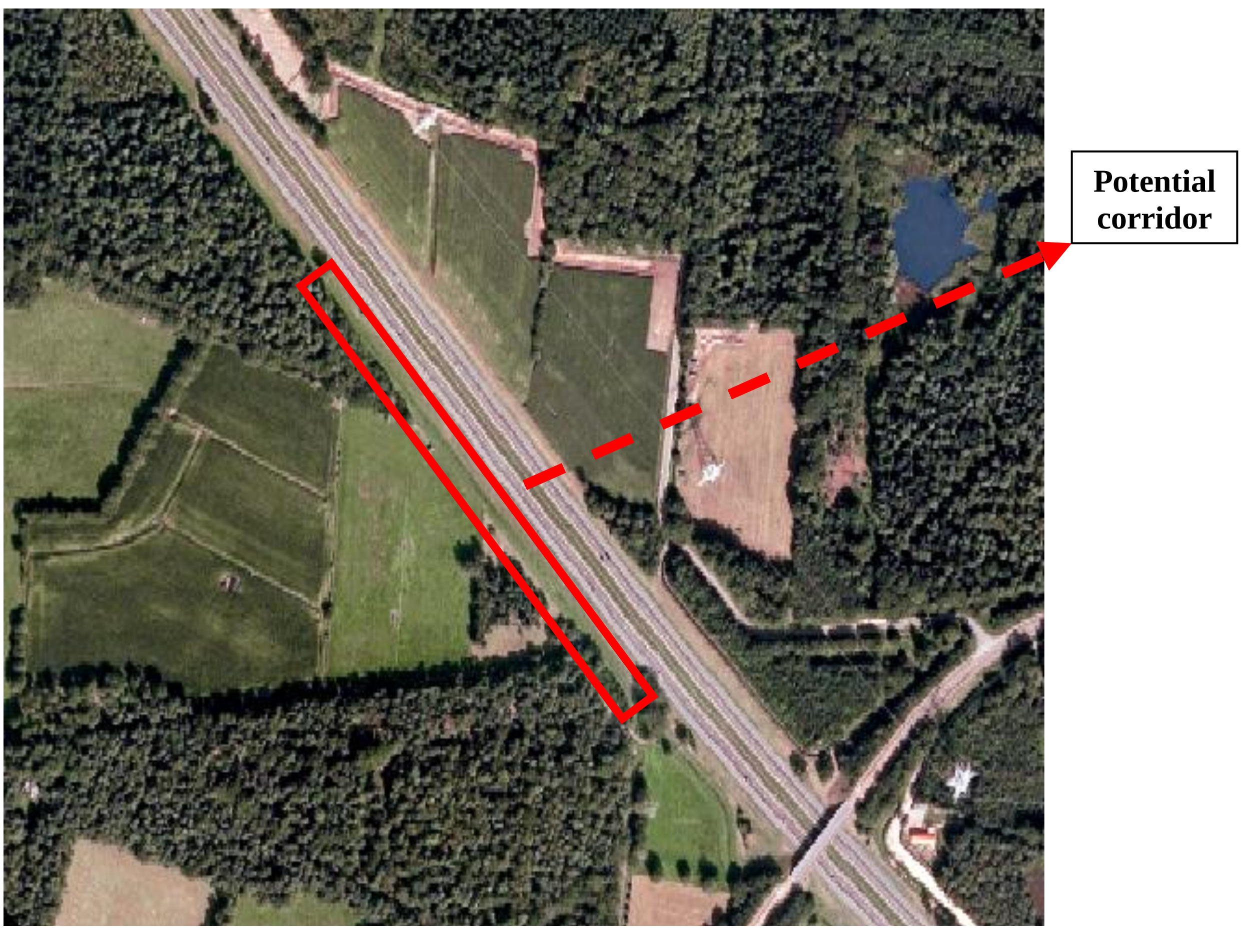


**Figure 2:** An example of a potential roadside wood vegetation corridor

potential corridors are established, this will enhance biodiversity in the area. Animals will be free to move from one area to another thus maintaining biological conservation. In addition, planting the ecological corridors with trees will increase the carbon stock of the roadside woody vegetation. The current roadside woody vegetation carbon stock will increase with time; however, the carbon stock will further increase if the ecological corridors are planted with trees. Therefore, scenarios must be developed to estimate the potential carbon stock increases of the roadside woody vegetation.

## 1.9 Developing carbon stock scenarios

To project carbon stock in roadside woody vegetation, different scenarios were analyzed. The scenarios were based on supporting the continuation of landscape features and development of ecological corridors with new woody vegetation plantings. In addition, the scenarios reveal how to best optimize biodiversity and carbon stocks of the roadside woody vegetation. Carbon stock scenarios can estimate the potential of carbon stock increase in the woody roadside vegetation. The increase in the carbon stock would further depict the carbon stocks as an ecosystem benefit of woody roadside vegetation. The carbon stock scenarios will simulate the potential carbon stock increase of the current roadside woody vegetation and if more trees are planted in the roadside verges. The data required for scenario simulation depends on the model selected (Hoover et al., 2000). The models selected should be appropriate to the geographic region and forest type. Models adopted in the Netherlands LULUCF report (Nabuurs et al., 2005) were used in the study. The Dutch report presented a semi dynamic system at Tier 2 (the use of country specific data) for forests and other nature terrains (trees outside forests, heathland, inland sand dunes, coastal dunes, swamp, and peat areas) in the Netherlands (Nabuurs et al., 2005). In the Dutch study, it was assumed that in all of these terrains the living biomass carbon stock does not change (Nabuurs et al., 2005). For example, according to National Inventory Reports, for trees outside forests, a change in stock is assumed to occur only if an area change occurs.

The Netherlands is a Party to the UNFCCC and therefore has an obligation to design and manage a national system for the Land Use, Land-Use Change and Forestry sector (LULUCF). With the establishment of the Kyoto Protocol and the LULUCF, countries could then “consider forestry activities as part of their climate protection strategy (Lindner and Karjalainen, 2007).” Most studies in the past have focused mainly on assessing growing stock within notified forest areas (Prasad et al., 2001). However, with the increasing emission levels of Green House Gases (GHG), there is a need to explore the carbon potential of non-notified forests like roadside wood vegetation at all levels. The quantification of carbon in trees outside forests will contribute to more accuracy in total carbon assessments at the national level. Although the area of roadsides is small in width, the vegetation does contribute to storing carbon. The contribution can be significant if extrapolated over all of the roadsides in the Netherlands, which has 132,888 km of roadways and 2582 km of expressways as of 2007 (Central Intelligence Agency, 2009). Like in many other countries of the world, there is insufficient data on roadside wood vegetation in the Netherlands. Moreover, most of the forest assessment methods are more applicable to large areas other than non-notified forests.

## 1.10 Research Objectives

The main objective of the study was to map the extent and composition of the woody vegetation and estimate carbon stock in current and potential scenarios in roadside woody vegetation along expressways and main roads in the Province of Overijssel (The Netherlands).

Specific objectives were:

- To map tree species distribution in roadside vegetation
- To estimate the current carbon stock of trees in roadside vegetation
- To perform scenario analyses of potential carbon stocks in roadside trees

## 1.11 Research Questions

- What is the species composition of roadside woody vegetation?
- What is the current carbon stock of trees in roadside woody vegetation?
- What is the difference in potential carbon stock under different scenarios?

# 2. Methods and Materials

## 2.1 Study area

### 2.1.1 Location and extent

The area chosen for this study was eastern Overijssel province. The province lies in the east of the Netherlands with the border of Germany to the East. The eastern portion of Overijssel consists of six municipalities: Denekamp, Enschede, Haaksbergen, Hengelo, Losser, and Oldenzaal (see Figure 3). The eastern Overijssel municipalities have a total area of 508 $km^2$, 190 km length of main roads, and 38 km of expressways. Provinces are not entirely independent and as the municipal lands must adhere to provincial region plans, the regional plans must fit within the national plans (PO, 2005). The province was selected as the study area because it was accessible by foot and bicycle and permission was guaranteed to access most major parts of expressways and main roads during fieldwork.

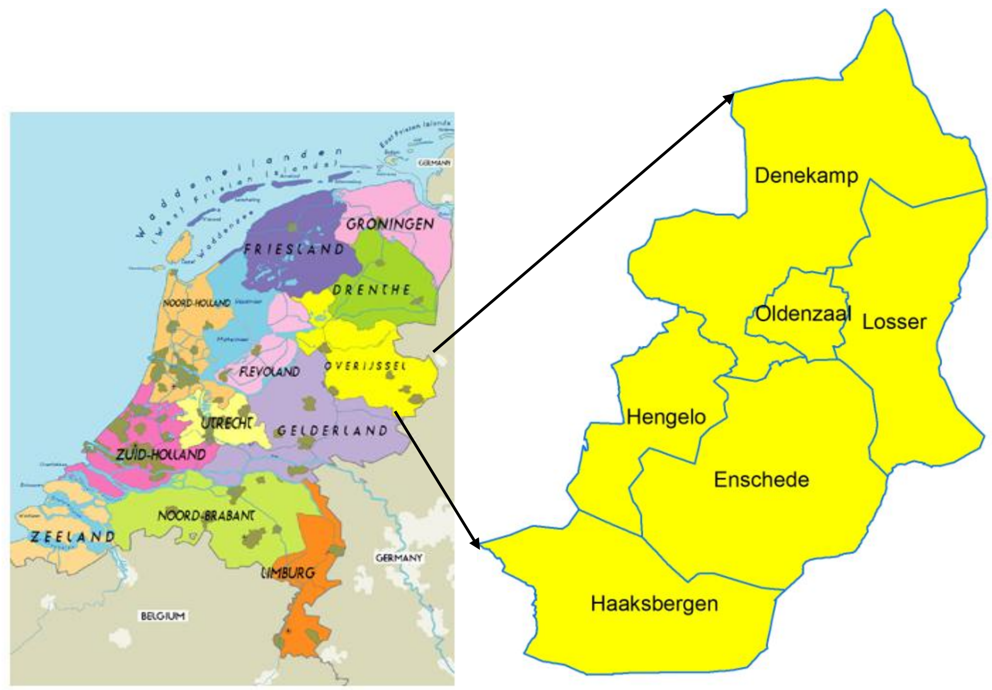


**Figure 3:** Location of study area

***(Source : http://www.map-of-netherlands.co.uk/large-political-netherlands-map.htm)***

## 2.2 Materials

### 2.2.1 Data description

The data used in this study was acquired from various sources as shown in Table 2 and was used for several purposes. For example; the topographic maps consisted information on roads in the study area while the Google Earth images (GE), consisted information on the location of roadside woody vegetation. This information was used to classify these features using the visual interpretation technique. The collected field data included; tree species, DBH, and average height which were used to estimate biomass and carbon stock of roadside woody vegetation.

The table below shows the data used in the study, its description as well as the source.

**Table 2:** Data used in the study

| Data | Description | Source |
|---|---|---|
| Image - 2005 | Google Earth images | Google Earth |
| Topographic - 2005 | Topographic maps of the Netherlands<br><br>map sheet 28E (Geesteren)<br>map sheet 28F (Ootmarsum)<br>map sheet 28G (Almelo)<br>map sheet 28H (Hengelo)<br>map sheet 29A (Denekamp)<br>map sheet 29C (Oldenzaal)<br>map sheet 34E (Haaksbergen)<br>map sheet 34F (Enschede)<br>map sheet 34G (Eibergen) | Topografische Dienst Kadaster |
| Road shape files - 2008 | Boundary of managed expressway land shapefiles | Rijkwaterstraat |
| Field data | Tree species , DBH, average height | Fieldwork |
| SPOT 5 image | 10 m resolution (07-28-2002) | ITC |

### 2.2.2 Software

Several software packages were used in this study. For example; ERDAS Imagine was used for image processing, SPSS for statistical analyses and ArcGIS for digitizing roadways, generating the roadside map, carbon map and the potential ecological corridors' map. CO2FIX is used for modelling and analyst the carbon stock prediction in different scenarios. These software packages were used in various sections of the approach indicated on the flow chart (Figure 4).

## 2.3 Methods

The study involved several steps as shown in Figure 4. First, during the pre-fieldwork phase, the study area images were downloaded from the GE website to fully identify the study area, then the visual interpretation technique was carried out to classify the study area vegetation features and finally the 2005 topographic maps were used to digitize roadways in the study area. During fieldwork, designed sample plots were visited and several measurements were taken including DBH, average height of trees, etc. These measurements were taken to assist in estimating biomass and carbon content of roadside woody vegetation. Species composition was another element considered during fieldwork to identify the various species along roadside woody vegetation in the study area. The technique used for interpretation of satellite data was visual interpretation. Interpretation was followed by ground-truthing. The roadside woody vegetation were classified into the following 5 classes:

- Cluster: Dense, no clear canopy
- Cluster: With clearly defined canopies
- Line: Small trees
- Line: Clear, large canopy
- Conifer

The flow chart below shows the various actitivites carried out during the study.

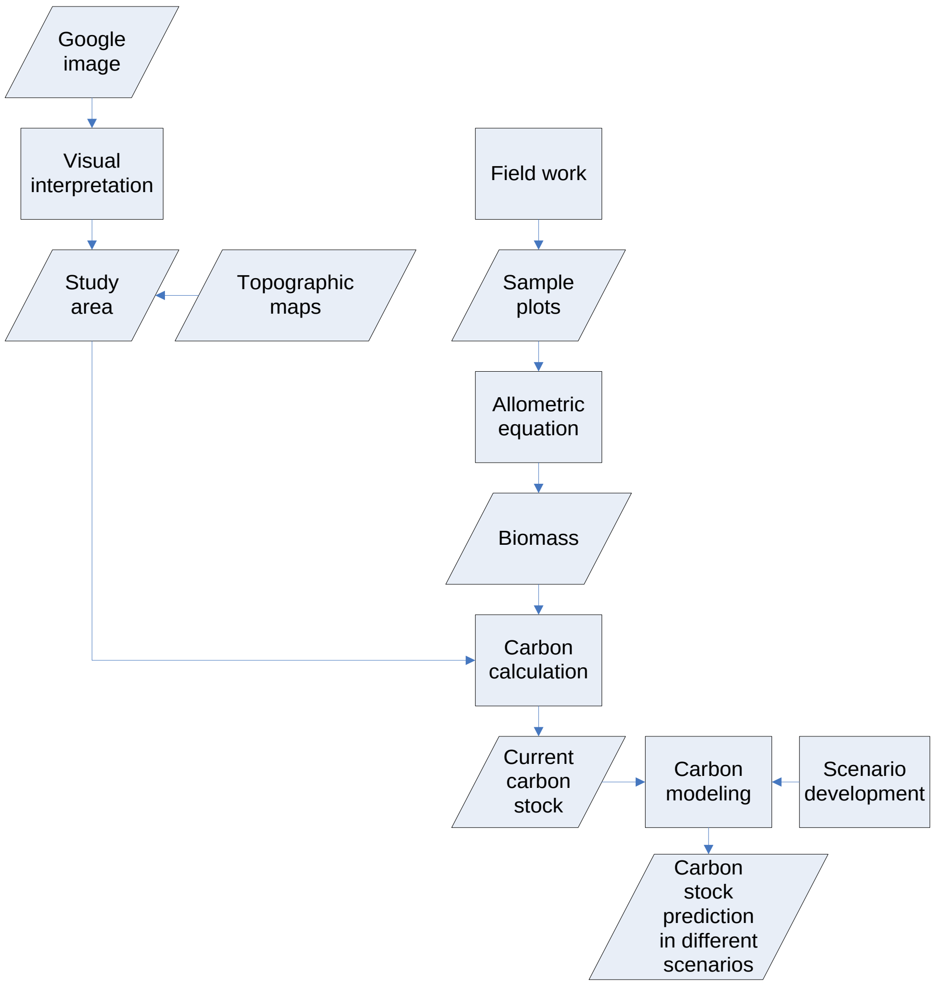


**Figure 4:** General methodological flowchart

### 2.3.1 Image processing

First, topographic maps were used to identify roadways and expressways in the study area. These roads were manually digitized in ArcGIS. This information was used as additional information to map the roadside vegetation. An attempt to use the available SPOT 5 image was not successful due to low resolution problems as highlighted by (Quackenbush, 2004): linear features such as roads are often narrower than the spatial resolution of the satellite. Therefore, Touratech QV x-plorer program (TTQV, 2009) as performed by (Emmanuel, 2008), was then used to capture multiple high resolution satellite images (resolution of 0.4 m) from GE which are freely available. Since the TTQV can only capture 500 images (each image 575m by 441m) at a time, the program was run several times in order to capture the entire study area (only the area that contained main roads or expressways). A total of 4416 images (and additional 4416 images for subsetting) were captured. The resulting captured satellite images had a resolution of 0.5 meters which were taken in December 31, 2005. However, there is uncertainty in the exact date because deciduous trees can clearly be identified with green leaves although the date is during winter time in the Netherlands. It was assumed then that the date was from sometime during 2005. A first interpretation of the image based on image characteristics, such as texture, shape, color, and pattern, were used to classify the roadside vegetation into five classes. Visual interpretation of and manual on screen digitization was then performed to determine the different woody vegetation classes. The resulting vegetation classes were based upon the canopy structure and tree formation of the sample plots. The vegetation was first divided into coniferous or deciduous. Second, the classes were divided based upon the landscape structure along the roadways. The classes were either identified as in a Line, single or two trees wide line of trees along the roadway, or in a Cluster, a grouping of trees along the roadways. Finally, the classes were further divided based upon the canopy structure. The canopy structure was identified as either Clearly Defined Canopy, or No Clearly Defined Canopy. The clearly defined canopy classification had trees with canopies that could clearly be distinguished from neighboring trees while no clearly defined canopy had trees with canopies that could not be clearly distinguished from neighboring trees. In addition, dividing based upon canopy was distinguishing between large trees and small trees. The roadside woody vegetation was classified in this manner in order to identify roadside woody vegetation that may have more carbon stock increase potential. It was assumed that the larger trees would have less carbon stock increase potential compared to the smaller trees. Trees in a clearly defined canopy class were identified as large when each tree's canopy within the sample plot could be clearly recognized.

The defined woody vegetation canopy classes were used to stratify the woody vegetation and consequently became the basis to identify the potential woody vegetation along the roadsides. The interpretation key listed below in figure 5 has examples of each class. The following are the defined classes used to stratify the roadside woody vegetation in the study area.

*Cluster: Dense, no clear canopy*

This visualized class' photogrammetric characteristics were a cluster, brownish-green, coarse, and no identified shapes within the woody vegetation

*Cluster: With clearly defined canopies*

This visualized class' photogrammetric characteristics were green, rough, and clearly identifiable round woody vegetation cover

*Line: Small trees*

This visualized class' photogrammetric characteristics were green and black (possible shadows), a clear separation pattern between woody vegetation objects, and in a singular formation

*Line: Clear, large canopy*

This visualized class' photogrammetric characteristics were brownish-green, rough, clearly identifiable large round woody vegetation cover, and in a singular line formation.

*Conifer*

This visualized class' photogrammetric characteristics were green, rough, small identifiable woody vegetation cover, and in a singualr line formation

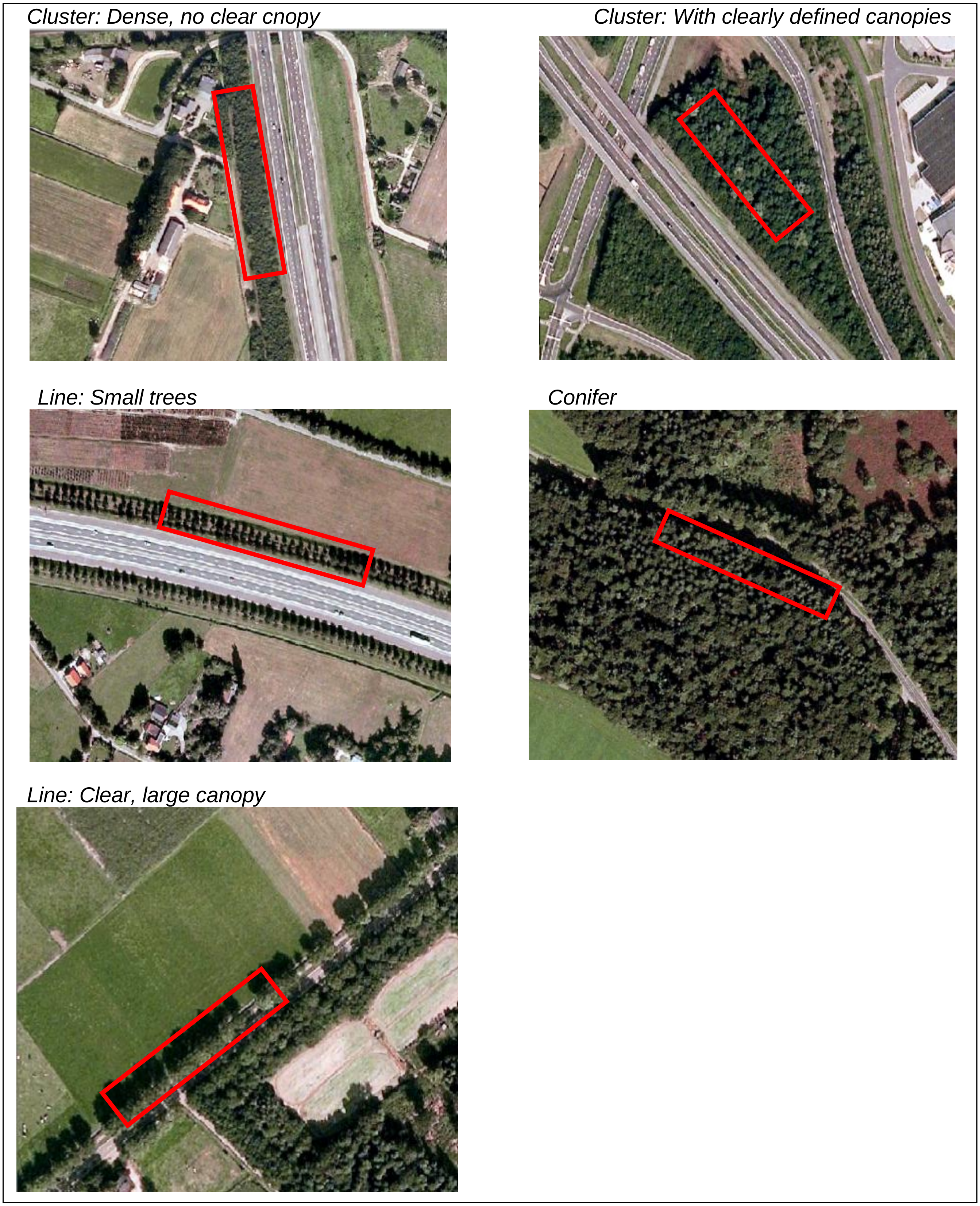


**Figure 5:** Examples of visualized classes (inside the red polygons)

### 2.3.2 Identifying available land and potential ecological corridors

Although the main aim of the research was to map roadside woody vegetation carbon stocks as an additional ecosystem function besides space for road safety, biodiversity, and landscape beauty, available roadside land and potential ecological corridors were also identified. Available roadside land was defined as roadside verge areas that did not have woody vegetation cover. In addition the available land had to meet the safety requirements (e.g. 10 meters from the edge of the expressway) of the management organization. Using the produced image of the study area, potential ecological areas were specified as well. Figure 6 shows some examples of potential ecological corridors. To qualify as a potential ecological corridor, the land for an ecological corridor had to lie within the land that was identified as available land. Next, a potential ecological corridor had to meet one of two criteria. First, if the available land did not inhibit the current landscape scene (continuance of woody vegetation), then the available land was identified as an ecological corridor. The second criteria was an alteration of the current landscape scene. If the distance between fragmented patches or lines of trees along the roadway were 500m or less, then the land was also identified as a potential ecological corridor. The ecological corridors identified could then be used to plant trees in order to increase the carbon stock.

### 2.3.3 Fieldwork

Sample plots measurement was the main data type obtained from the field work. Stratified random sampling was applied to randomly select the sample plots’ location. Reconnaissance visit was carried out guided by Rudie de Jong of Rijkwaterstraat, to establish access routes before fieldwork.

Bicycle was the main mode of transportation used during the field work. The identification of areas that could be accessed by the bicycle were identified as well during the reconnaissance visit. Then, using a Global Positioning System (GPS), these accessible areas were marked. The sample points that fell in the non-accessible areas were removed and replaced by randomly selected sample point. Alternate random sample points had previously been generated with a computer and with the use of a random number sheet, a new sample point was selected. Sample plot measurements were necessary to estimate the above ground biomass and annual carbon sequestration along roadside vegetation.

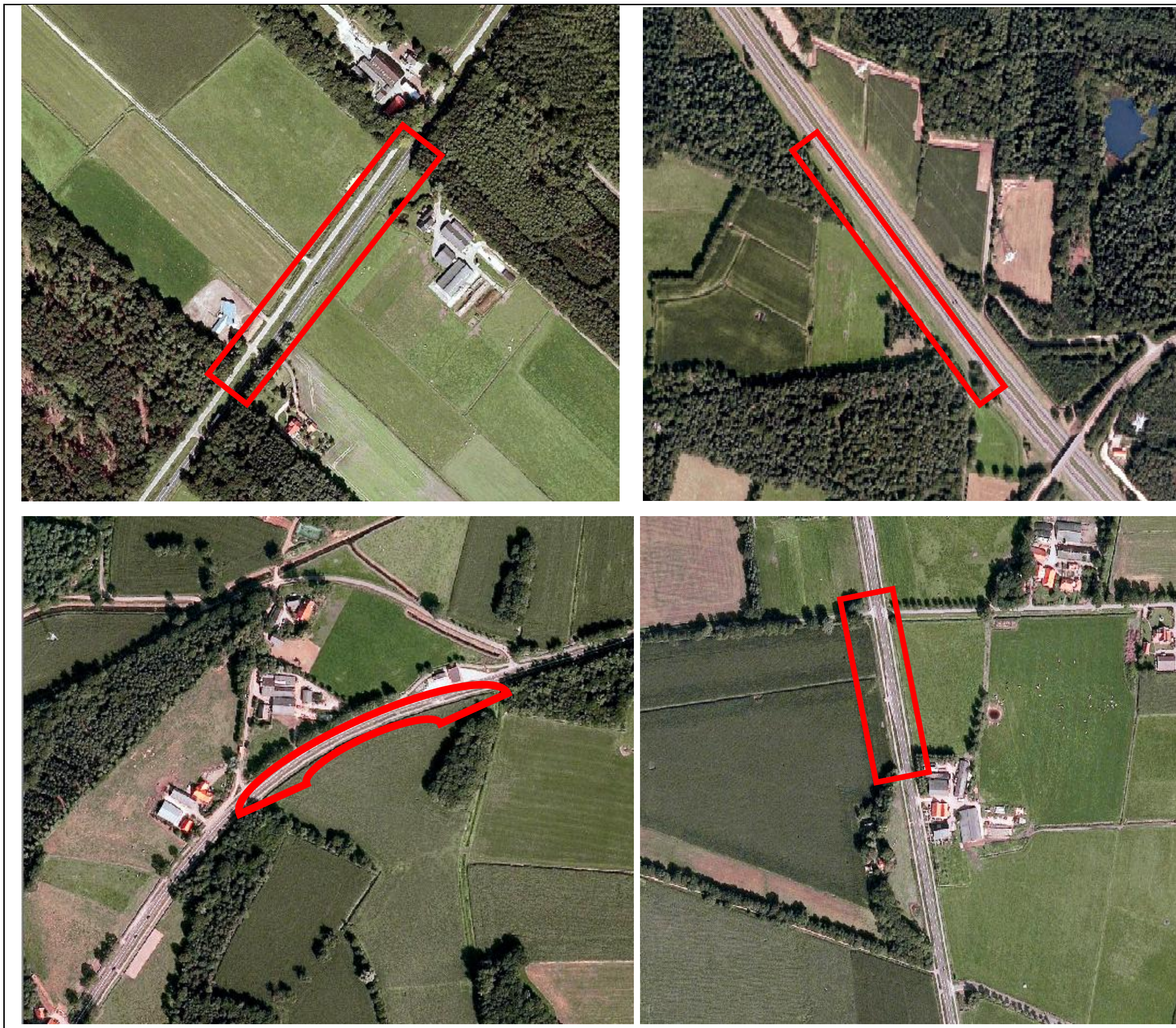

**Figure 6:** Examples of potential corridors (inside the red polygons)

The intended sampling design was to use circular plots with a radius of 8.96 m (therefore a sample plot size of 250 $m^2$). However, circular plots were not applied to all sample points; therefore, this sampling plot method was applied to only six sample points. This occurred because roadside vegetation is usually planted in narrow strips of land adjacent to the roads, therefore, an insufficient space for a circular plot with the 8.96m radius. In this case, the sample plot design was determined upon arrival to each individual sample point (see Appendix 2).

The center of the circular plots was then recorded using the GPS. Sample points that required rectangular plots had varying dimensions. The dimensions of the rectangular plots were determined by the width of the roadside verge and then a length (along the road) was determined (see Appendix 2 for lengths and plot size areas). Therefore, the sample plot sizes varied dependent upon how far the line of trees in the sample plot went. Species and DBH (at 1.3m above the ground) of each standing tree above a minimum DBH of >5cm were recorded as well in each plot. The species were identified from previous expert knowledge, pictures, and descriptions of Dutch trees (Speel, 2009). Those trees that were not identified at the plot location, a leaf and picture of the tree (particularly its bark) were taken in order to identify the species type. Over-bark DBH of each tree in the plots was measured with a diameter tape to the nearest mm.

Ninety-two sample plots (Figure 7) were used for estimation of biomass and carbon sequestration. In addition, the plot dimensions were recorded for width and then used to help formulate the width of the verges along the main roads. An average of the widths at each plot for each main road was used to determine the width of the verge for the road. The calculated width was then applied to the entire road length as the roadside areas available for the study (see Appendix 3).

Slope correction, with the use of a slope correction sheet (provided by ITC) and a clinometer, was applied to some plots (due to embankments located along the expressways) to insure sample plot size correctness. Circular plots were preferred where applicable because they are easy and quick to layout in the field, and determining which trees were inside the plot was less problematic than in rectangular plots.

**2.3.4 Biomass estimation**

Allometric equations; developed for tree species in Europe used to calculate above ground biomass based on stem diameter, stem height, or a combination of both according to (Nabuurs et al., 2005) and wood density measurements obtained from the Allometric Biomass and Carbon Factors Database were used to estimate biomass (Somogyi et al., 2009). The total tree biomass for each plot was estimated using tree species allometric equations developed for European trees (Table 3). The biomass equations are the same equations used by Nabuurs *et al*. (2005) for submitting a national system of greenhouse gas reporting for forest and nature under the UNFCCC in the Netherlands.

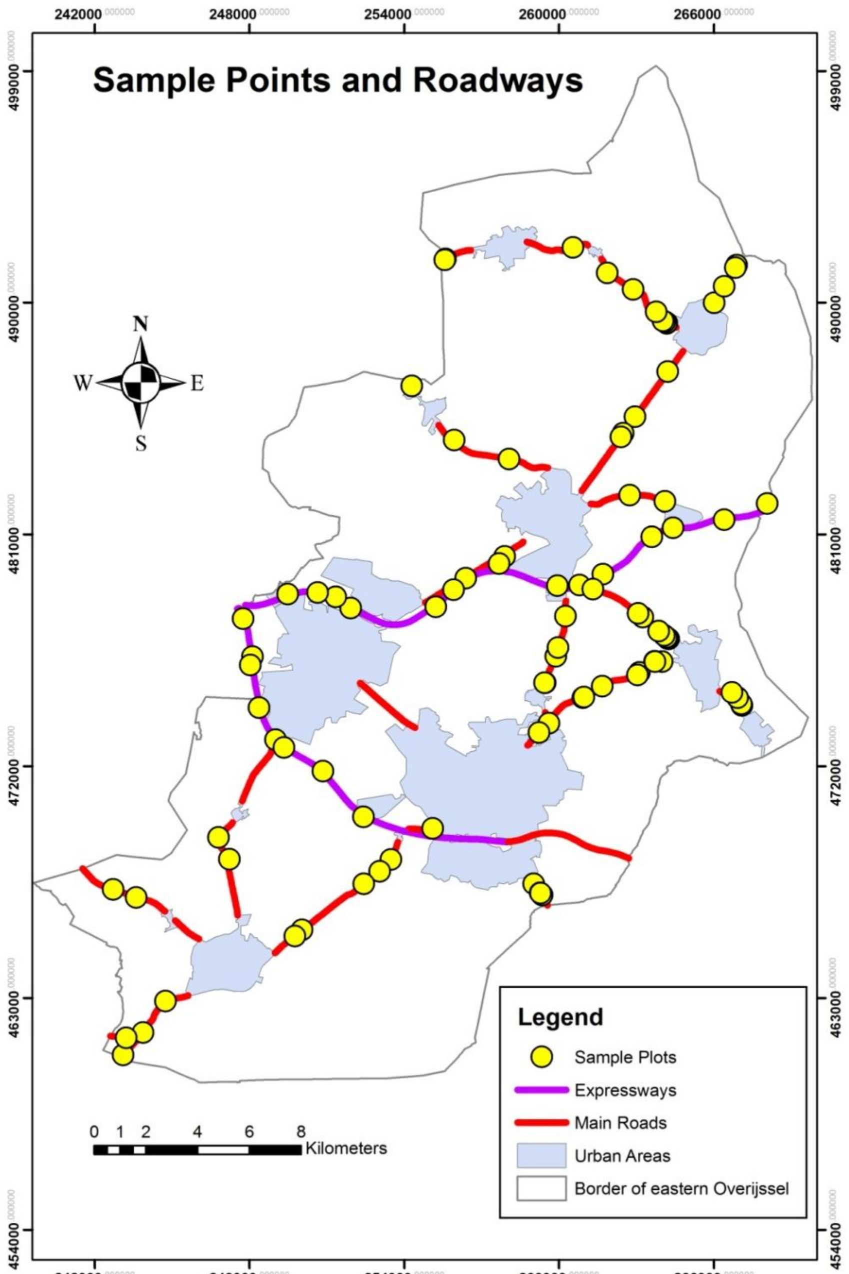


**Figure 7:** Fieldwork sample points

The allometric equations developed use the DBH and height (when applicable) to estimate the entire AGB of each tree measured. However, during the quantification of biomass estimates of roadside vegetation, the small trees and shrubs were left out to reduce uncertainty in carbon estimations.

**Table 3:** Tree species identified and relevant biomass equations applied

| Species' name | Common name | Biomass equation | Reference |
|---|---|---|---|
| *Acer pseudoplatanus* | Sycamore maple | $0.029*D^{2.50038}$ | Johansson, 1999 |
| *Betula pendula* | European White Birch | $0.029*D^{2.50038}$ | Johansson, 1999 |
| *Corylus avellana* | European filbert | $0.41354*D\^{}^{2.15}$ | Hochbichler, 2002 |
| *Fagus sylvatica* | European Beech | $0.0798*D^{2.601}$ | Bartelink, 1997 |
| *Fraxinus excelsior* | Common Ash | $0.41354*D^{2.14}$ | Hochbichler, 2002 |
| *Pinus nigra* | Austrian_pine | $0.0217*(D^2 * H)^{0.9817}$ | Hamburg *et al*., 1997 |
| *Pinus sylvestris* | Scots Pine | $0.0217*(D\^{}2 * H)^{0.9817}$ | Hamburg *et al*., 1997 |
| *Populus deltoides* | Eastern poplar | $0.0208*(D^2*H)^{0.9856}$ | Hamburg *et al*., 1997 |
| *Populus tremula* | Aspen | $0.0208*(D\^{}2 * H)^{0.9856}$ | Hamburg *et al*., 1997 |
| *Pseudotsuga_menzoiesii* | Douglas Fir | $0.111*D^{2.397}$ | Van Hees, 2001 |
| *Quercus palustris* | Pin Oak | $0.41354*D\^{}^{2.14}$ | Hochbichler, 2002 |
| *Quercus robur* | English Oak | $0.41354*D^{2.14}$ | Hochbichler, 2002 |
| *Quercus rubra* | American Oak | $0.41354*D^{2.14}$ | Hochbichler, 2002 |
| *Sorbus aucuparia* | European mountainash | $0.41354*D^{2.14}$ | Hochbichler, 2002 |

### 2.3.5 Carbon estimation

This phase involved several steps to convert wet biomass into carbon content (Figure 8). Calculating the carbon content of each tree requires the wood density of each tree species and the carbon fraction that can be accomplished with wood samples from the trees. However, in this study, it was not allowed to damage the trees within the study area, but a few trees were found that had already been cut down by management authorities. From these already fallen trees, the increment borer was used to extract three samples. The pieces (chunks of wood from the falling of the trees) of wood as samples were also collected.

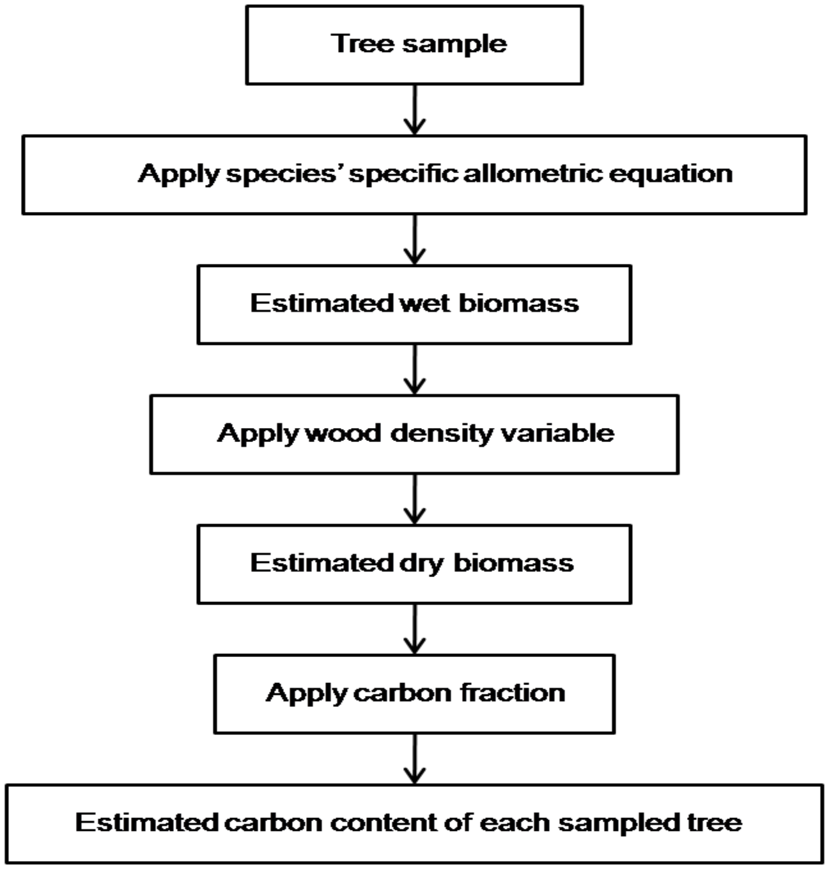


**Figure 8:** Flow chart for estimation of a single tree's carbon content

In total, seven tree samples were taken from seven different trees. The tree species of the samples were four oak and three beeches. The wood was placed in an oven and dried at 50°C until there was no change in weight as described by Simpson (1999). Each core sample was weighed every day on a scale with milligram precision. The wood samples were weighed every day until there was no longer any loss in weight of a sample. When no change in weight was noticed, the percentage of weight lost was calculated. The remaining percentage of each sample was the fraction dry weight of each sample respectively. The carbon fraction of the samples was used to give a general estimation if the sample trees along the roadways were similar to carbon contents calculated in previous studies.

After identifying the tree species in the study area, the wood densities were identified for each species using the Allometric, Biomass and Carbon Factors Database (Somogyi et al., 2009)(see Table 4). If the wood density was developed for Dutch trees then that density was chosen; however, not all species had Dutch wood densities available, so wood densities were chosen from other European countries that are physically located closest to the Netherlands. The wood densities' database was applied to each tree species found in the sample plots because the wood sample size was too small to claim with any confidence that the calculated wood densities could be applied. Lastly, a carbon fraction of 0.5 was applied to each tree in order to calculate the carbon content of each tree.

Calculating the wood density was not a significant part of this research; however, the results showed that the calculated wood densities were within a reasonable range of the wood densities applied from the Allometric, Biomass and Carbon Factors Database. The calculated wood densities were not applied because the sample size was too small and other quality control conditions were not met. The conditions included:

- an unknown time between the tree falling and collection of wood samples,
- potential of some water content loss because of the time between falling and sampling,
- potential of increased absorption of water after the trees fell.

For these reasons and the small sample size the calculated wood densities were not used.

**Table 4:** Wood densities of tree species found in sample plots

| Specie name | Wood density (g/cm$^3$) |
|---|---|
| *Acer pseudoplatanus* | 0.49 |
| *Betula pendula* | 0.61 |
| *Corylus avellana* | 0.62 |
| *Fagus sylvatica* | 0.56 |
| *Fraxinus excelsior* | 0.65 |
| *Pinus nigra* | 0.46 |
| *Pinus sylvestris* | 0.43 |
| *Populus deltoides* | 0.41 |
| *Populus tremula* | 0.41 |
| *Pseudotsuga_menzoiesii* | 0.46 |
| *Quercus palustris* | 0.60 |
| *Quercus robur* | 0.60 |
| *Quercus rubra* | 0.60 |
| *Sorbus aucuparia* | 0.64 |

*Source: Allometric, Biomass and Carbon Factors Database, available at: http://afoludata.jrc.ec.europa.eu/DS_Free/abc_intro.cfm*

The estimated carbon content of each tree in a sample plot was aggregated to determine the total carbon content (tons) of each sample plot. The total carbon content of each plot was then divided by its plot size resulting in tons of carbon per hectare. Each visualized class (except Conifer which had one plot) had multiple carbon per hectare estimates. The average carbon per hectare content was calculated for each class. In order to calculate the current carbon stock of the roadside woody vegetation, the average tons carbon per hectare for each class was applied to each class' estimated roadside land area. Aggregation of the total carbon for each class resulted in the total carbon stock of the woody roadside vegetation in Eastern Overijssel. The estimated carbon stock of each class and the total carbon stock were the baseline for carbon prediction modeling in the study.

### 2.3.6 Carbon prediction

CO2Fix modelling was used as the model to predict the carbon stock. This model uses a multi-cohort ecosystem-level model based on carbon accounting of forest stands, including forest biomass, soils and products. Cohort is defined as a group of individual trees or species, which are assumed to exhibit similarly growth, and which may be treated as single entities within the model (Alder and Silva, 2000). Biomass module was used to predict the sequestered carbon in the agro-forestry. In this study, age (year), current annual increment (CAI) in m3/ha/year, carbon content (MgC/MgDM), wood density (MgDM/m3) and initial carbon (MgC/ha) were the main inputs in this biomass module. However, only the current annual increment and initial carbon was used. Furthermore, because the carbon was calculated per hectare, strange results were possible because of the shape of the study area. Yield tables (Jansen et al., 1996) were used to obtain carbon increment values. The yield tables require the dominant height and age of the tree species in order to determine which yield table class the tree belong. The yield table class is very important because different classes result in different growth rates of the tree species. In this study, the dominant height (the average height that was calculated for each sample plot because in each plot it was assumed the trees were planted at the same time therefore resulting in similar heights) and the next to lowest yield curve growth for each species. The next to lowest yield class was chosen because often the growth of a tree species greatly depends on the quality of soil (Miller et al., 2004). Furthermore, a lower yield table growth curve was chosen because I wanted to be more on the conservative side and not overestimate the growth. Once the yield class and the dominate height were chosen, the starting age of the species was estimated as well using the yield table. With this information, the carbon increment values were identified for each species in each sample plot class. Next, the estimated area of each roadside woody vegetation class was used to calculate the starting carbon for each tree species in each roadside class. The percentage of each species sampled in each vegetation class determined the carbon stock estimation of each class.In addition, CO2Fix was used because the model automatically computes carbon increment values for time periods that occur before the inputted yield table values. For example, *Quercus rubra's* yield table information starts at year 10, but if new trees are planted then the carbon increment values are computed by the model for the first 10 years of growth. With the starting age, amount of carbon per species in each class, and the carbon increment values, the information was entered into the CO2FIX V 3.1 model according to (Masera et al., 2003; Schelhaas et al., 2004). The CO2Fix model was used to estimate the potential carbon stock of the roadside vegetation classes in different scenarios.

### 2.3.7 Scenario development

The scenario development phase involved the steps explained below. During the fieldwork, it was realized that most trees planted on the roadside were dominated by one species (*Quercus spp*) which does not project well the aim of enhancing greater biodiversity. In order optimize biodiversity and the carbon stock; four scenarios were developed. The scenarios showed the difference between potential carbon stock increases over periods of time and with different tree planting designs. The scenarios considered current roadside woody vegetation, available roadside land for planting trees, and land for potential ecological corridors. The estimated carbon stocks of the four scenarios were simulated for 10 and 40 year time intervals (Table 5). The 10 year interval was chosen because Rijkwaterstraat's "Greenness plan" is based on a five or ten year period (Sheerder and Tummers, 2008). A 40 year time was chosen because goals of the IPCC are to have $CO_2$ emissions reduced by 50% before 2050 (IPCC, 2006). Since trees do not reduce $CO_2$ emissions, the growth of newly planted trees can sequester some of the emissions. Therefore, the planting of trees along the roadside may qualify as afforestation, which the government can use to offset some $CO_2$ emissions in accordance with the Kyoto Protocol.

**Table 5:** Scenarios simulated during the study

| No. | Scenarios | Action modeled | Projection period |
|---|---|---|---|
| 1 | Current woody vegetation | No new plantings | 10 & 40 years |
| 2 | Current woody vegetation and all currently available non woody roadside vegetation planted | Plantings with only *Quercus* species trees | |
| 3 | Current woody vegetation and all currently available non woody roadside vegetation planted with a mix of tree species | Plantings with a mixture of different tree species on all available non woody roadside land | |
| 4 | Current woody vegetation and identified ecological corridors planted | Plantings with a mixture of tree species on potential roadside ecological corridors | |

The scenarios are explained as follows:

**Scenario 1**

The first scenario estimated the future carbon stock of only the current woody roadside woody vegetation. Therefore, none of the available land is planted with trees, but left as its current landscape and management plan. The first scenario was important to estimate the potential carbon storage increase in the current roadside woody vegetation. The second, third, and fourth scenarios used the results of the first scenario plus different planting schemes for the available land.

**Scenario 2**

During the fieldwork, it was noticed that the more recently planted trees were dominated by species of *Quercus.* It may be that current management are currently and in previous years have been only planting *Quercus* trees. In order to simulated current management practices, the second scenario simulates that only *Quercus* species trees are planted on all available land. The trees are planted on all the available land in order to maximize the potential carbon stock of the roadside woody vegetation in relation to land available. With the results from scenario 1, this scenario would show the maximum estimated carbon stock increase of the roadside woody vegetation.

**Scenario 3**

In the third scenario, all the identified available land was to be planted with a mixture of different tree species. The purpose of planting mixed tree species was to increase carbon stock while also increasing biodiversity. In scenario three and four, 5 species were considered: *Populus tremula*, *Betula pendula*, *Fraxinus excelsior*, *Fagus sylvatica*, and *Quercus rubra*. The different species would be planted in even amounts, each species accounting for 20% of the new plantings. *Betula pendula*, *Fraxinus excelsior*, and *Quercus rubra* were chosen because they had high wood densities (therefore the potential for higher carbon content and sequestration) while *Populus tremula* and *Fagus sylvatica were chosen because* they are more native to the study area, hence improved nature conservation. Furthermore, the even distribution of the new plantings were in response to the uneven distribution of the current trees in the study area. It was then assumed that the best way to increase and then conserve biodiversity was to plant an even distribution of different tree species in the available land.

**Scenario 4**

Lastly, the fourth scenario would simulate the carbon stock and biodiversity increase if identified ecological corridors were planted with the same assortment of different tree species as seen in scenario three. Since the current management plan of the roadside vegetation includes incorporating the current landscape, it would not be reasonable to plant all identified land with trees. Therefore, by identifying some of the available land as ecological corridors, scenario four can increase carbon stock and biodiversity while maintaining some of the current landscape management plan.

# 3. Results

## 3.1 Current and available land for roadside woody vegetation

Figure 9 shows the amount of land available along expressways, roadways and ecological corridors. Roadside verge that could potentially be planted with woody vegetation along the expressway is slightly greater than the current woody roadside vegetation along expressways. The available land for conversion along main roads is nearly twice its current amount of woody vegetation. Figure 6 shows some snapshots of both the available land along the expressways and main roads identified as potential ecological corridors of woody vegetation. Nearly one quarter of the identified land is available for conversion.

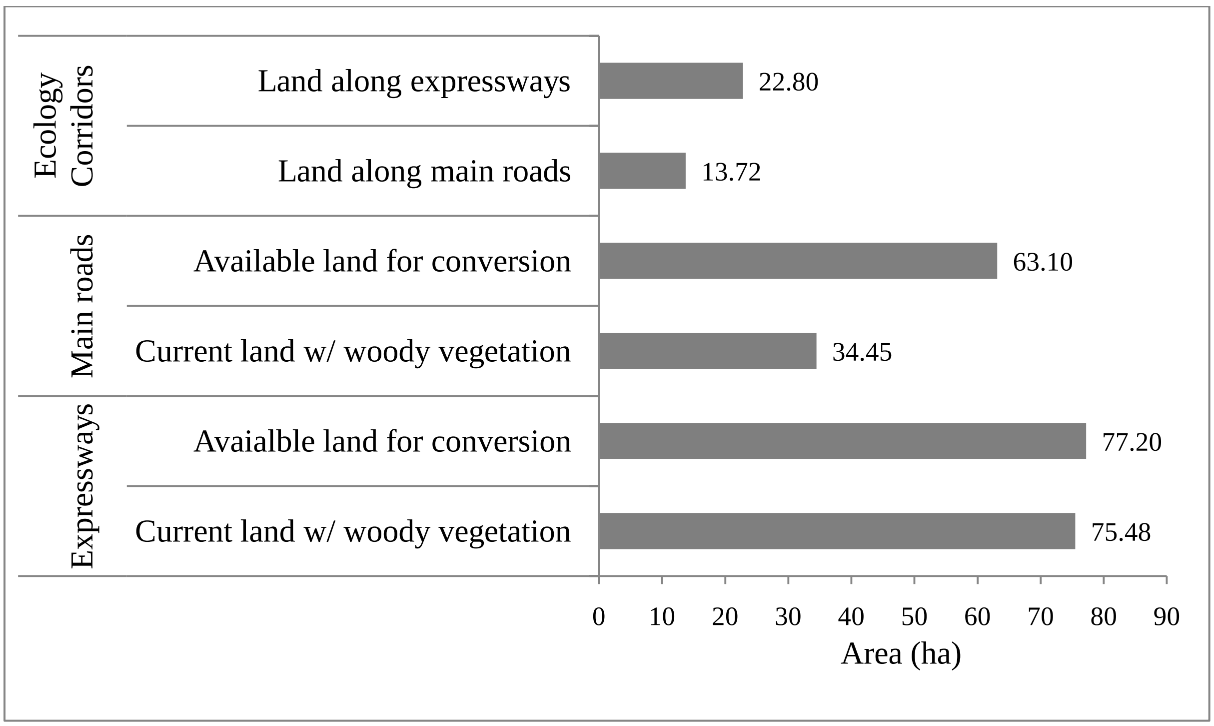


**Figure 9:** Area (ha) of current land available per visualized class

## 3.2 Composition of sampled trees

The following figure (10) below illustrates that 14 different tree species were identified are their individual percentage of the total trees measured during the fieldwork. Four species, *Betula* *pendula*, *Fagus excelsior*, *Quercus robur*, and *Quercus rubra* are the more dominant species identified. Furthermore, *Quercus robur* and *Quercus rubra* account for nearly two thirds of all the trees identified in the study. Although 14 species were identified, the division of the tree species is dominated by the *Quercus* species revealing that the biodiversity balance of the roadside woody vegetation is uneven.

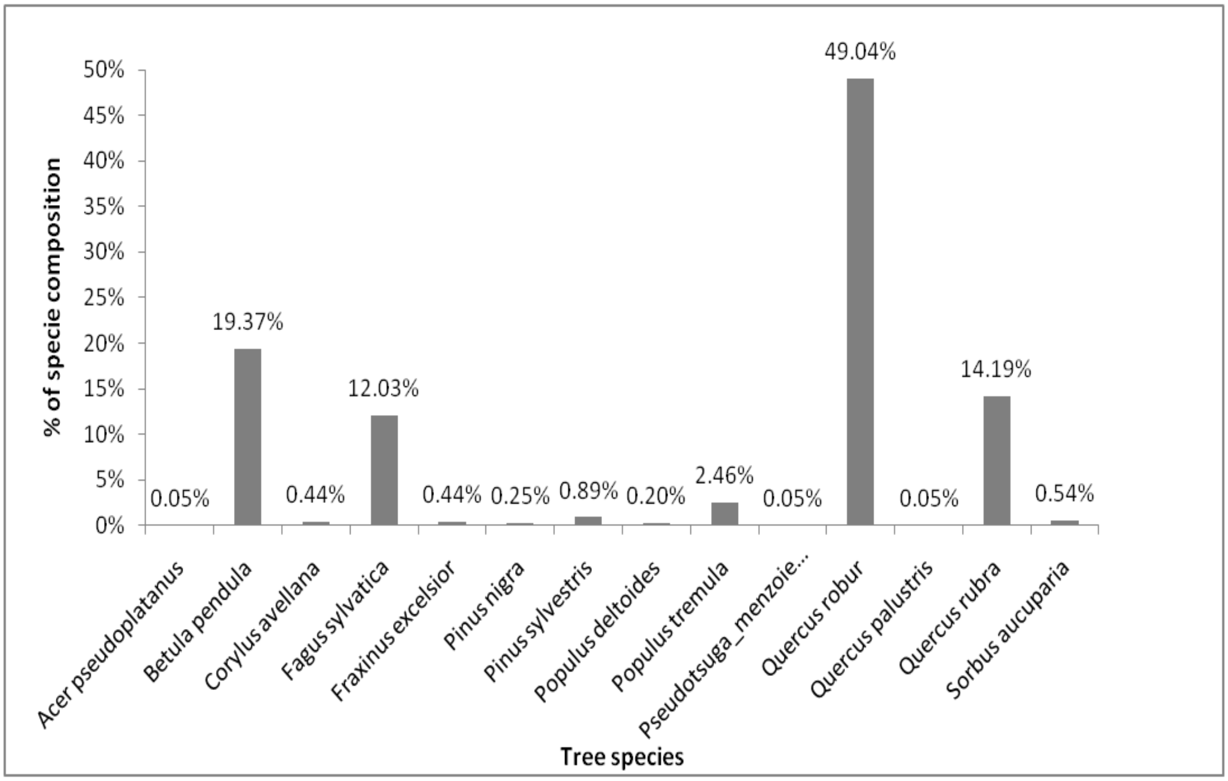


**Figure 10:** Percentage distribution of tree species in all sample plots

Each class had its own species composition as well. Figure 11 shows the percentage of each species in each class. Figure 11a shows that the class is made up of only one species, *Pinus nigra*. Figure 11a,b,c, and d show that the *Quercus* species make up the majority of each class. Furthermore, the four most dominate species, *Betula pendula*, *Fagus sylvatica*, *Quercus robur*, *Quercus rubra*, throughout the study area, also dominate the classes as seen in 11b, 11c, 11d, and 11e.

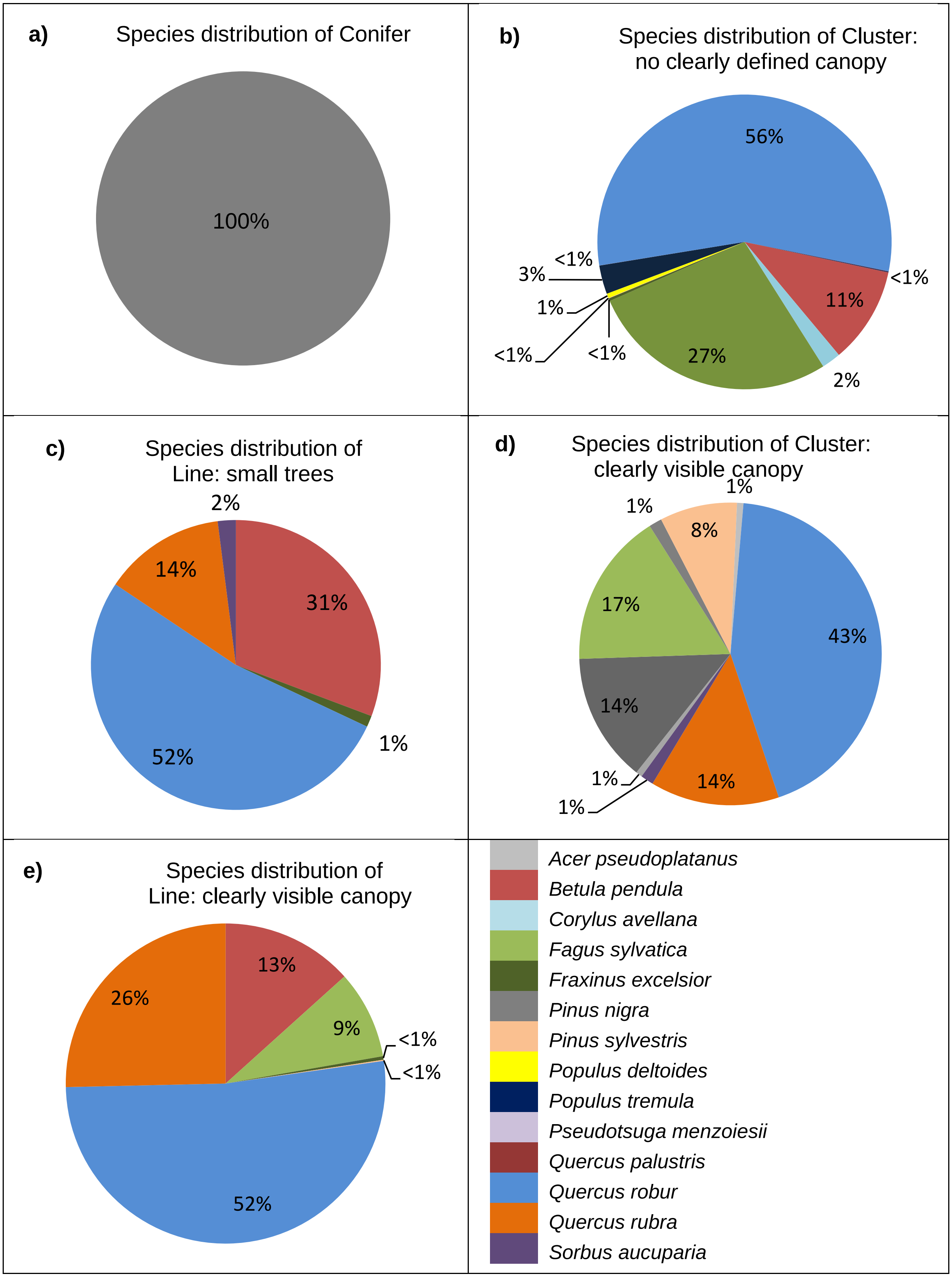


**Figure 11**: Species composition of each class

### 3.3 Biomass estimation

Each class of the woody vegetation is composed of different species of trees. The first class was the *cluster: dense, no clear canopy class:* trees that are in a cluster (or not single row straight line along the road) and have no clearly identifiable crown covers, then *cluster with clearly identified canopy* : cluster of trees that contain distinguishable crown covers and the third class was *Line: small trees* which had small trees or even bushes that, but had no distinguishable crown cover. *Line: clear, large canopy* contained trees that appeared to be in a straight single line with clearly distinguishable crown covers. Lastly, *Conifer* was the final class that contained clearly distinguishable conifer tree crown covers. Figures 12 shows the biomass distribution of each tree species in each visualized class. Furthermore, the class Conifer (Figure 12a) is shown to be made up of only one species, *Pinus nigra*. The results of each class show that the *Quercus* species family dominates the biomass estimates of three of the five classes; figure 12c is 88%, figure 12e is 86%, and figure 12d is 79%. A fourth visualized class, figure 12b, had the majority, 57% (including 1% *Quercus rubra*), of its biomass linked to the *Quercus* species family. The four figures show that the biomass of the Quercus species family represents the large majority of the total biomass of trees along roadways.

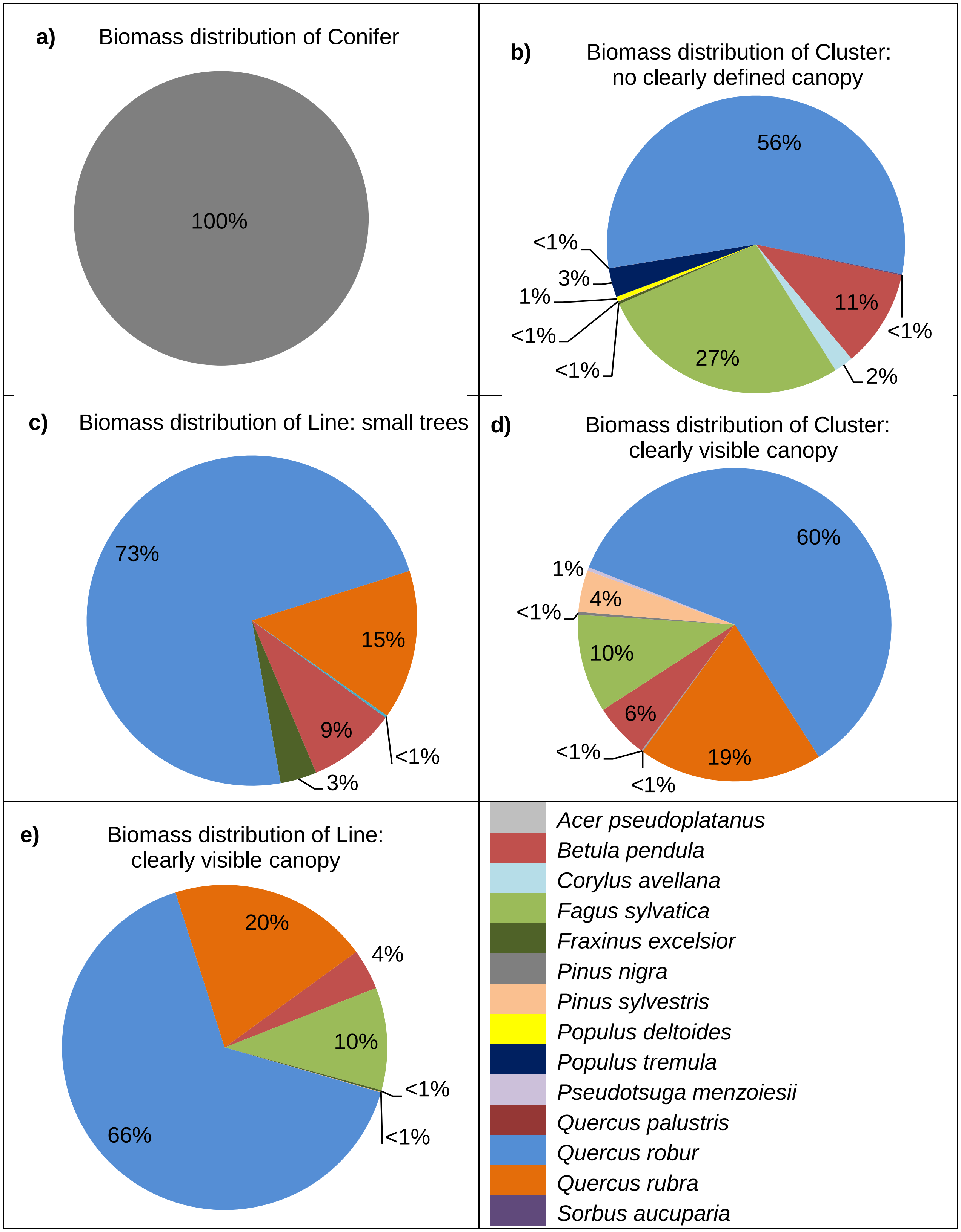


**Figure 12:** Biomass by tree species of each visualized class

### 3.4 Calculated wood density

Wood densities of the Oak and Beech samples revealed an average wood density ($g/cm^3$) of 0.55 and 0.56 respectively (see table 6). The calculated Oak density is 0.05 less than the wood density used in this research. However, the calculated wood density of the Beech was the same as the wood density from the wood density database. Although the wood densities were the same for the Beech, the wood density database was deemed more reliable because of the small sample size. In addition, the calculated wood density of Oak was also not used because of the small sample size in this research, but the calculated wood densities did give a general acceptance that the wood densities from the wood density database could be used.

**Table 6:** Wood densities from lab results

| | Start weight (g) | Final weight (g) | Change (g) | Wood density ($g/cm^3$) | Average Wood density ($g/cm^3$) |
|---|---|---|---|---|---|
| Oak 1 | 581.71 | 291.30 | 290.41 | 0.50 | |
| Oak 2 | 2.64 | 1.14 | 1.50 | 0.57 | 0.55 |
| Oak 3 | 1.27 | 0.57 | 0.70 | 0.55 | |
| Oak 4 | 44.34 | 18.25 | 26.09 | 0.59 | |
| Beech 1 | 0.96 | 0.41 | 0.55 | 0.57 | |
| Beech 2 | 510.83 | 230.96 | 279.87 | 0.55 | 0.56 |
| Beech 3 | 133.27 | 59.14 | 74.13 | 0.56 | |

### 3.5 Carbon distribution of woody vegetation along roadsides according to visualized classes

Figure 13 contains boxplot diagrams of each visualized class's estimated carbon stocks from each sample plot. First, the conifer class had only one sample plot, so there is no variation in the carbon stock estimate. The boxplots for the remaining four visualized classes revealed that none had outliers.

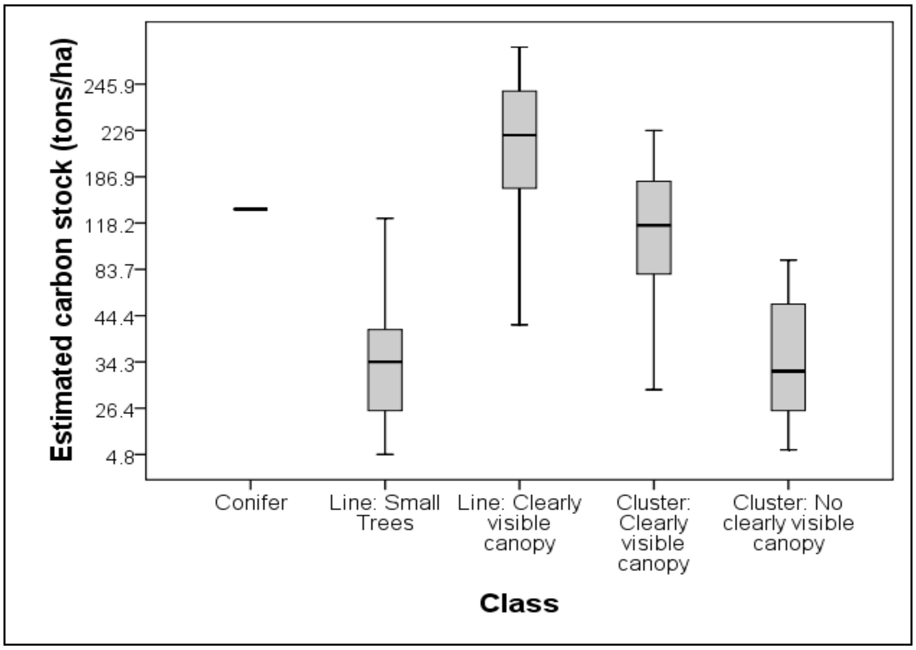


**Figure 13:** Boxplot diagrams of the five woody vegetation classes

### 3.6 Average carbon stock per visualized class

The following figure (figure 14) below shows the estimated average carbon stock of the visualized classes. The average carbon stock of each class was important in finding the current carbon stock of the woody roadside vegetation. Furthermore, figure 14 also shows the standard deviation of each woody roadside vegetation class.

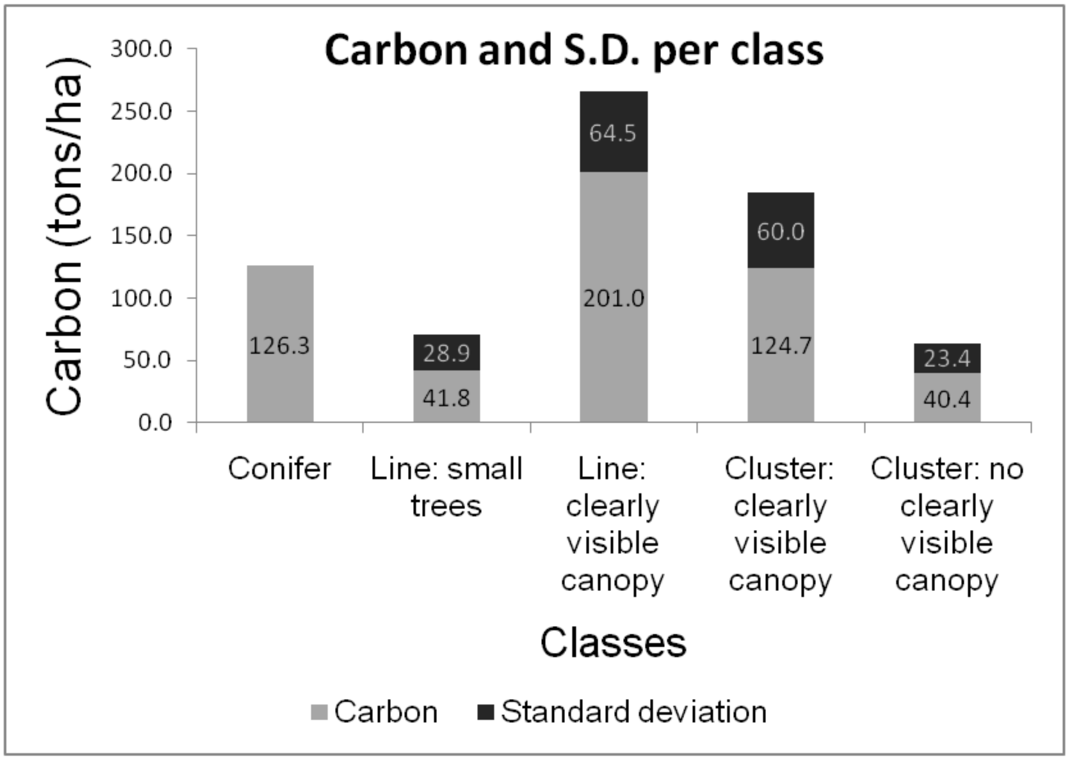


**Figure 14:** Average of estimated carbon stock and standard deviation of each class

Figure 15 below is the study area map showing sequential map sheets of estimated carbon stocks of the current roadside woody vegetation. The mapped carbon content of the roadside woody vegetation is based upon the visualized classes with the calculated average carbon (tons/ha) for each class. Due to the small width of the roadside vegetation, the spatial carbon content is hard to view; therefore, map sheets are needed to show details as shown in Figure 16. The rest of the map sheets are in Appendix 4.

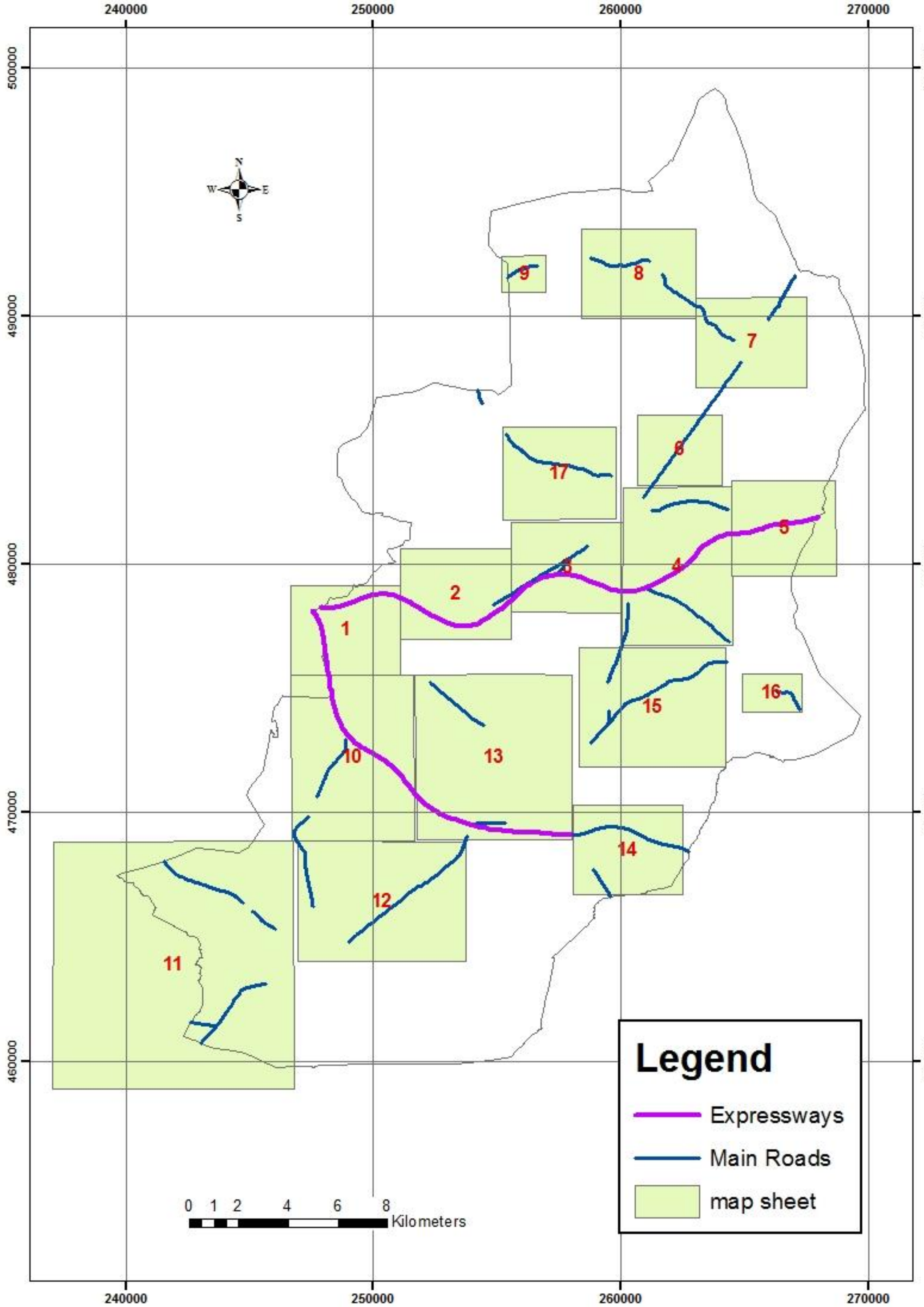


**Figure 15:** Distribution of carbon content (tons/ha) in eastern Overijssel Province

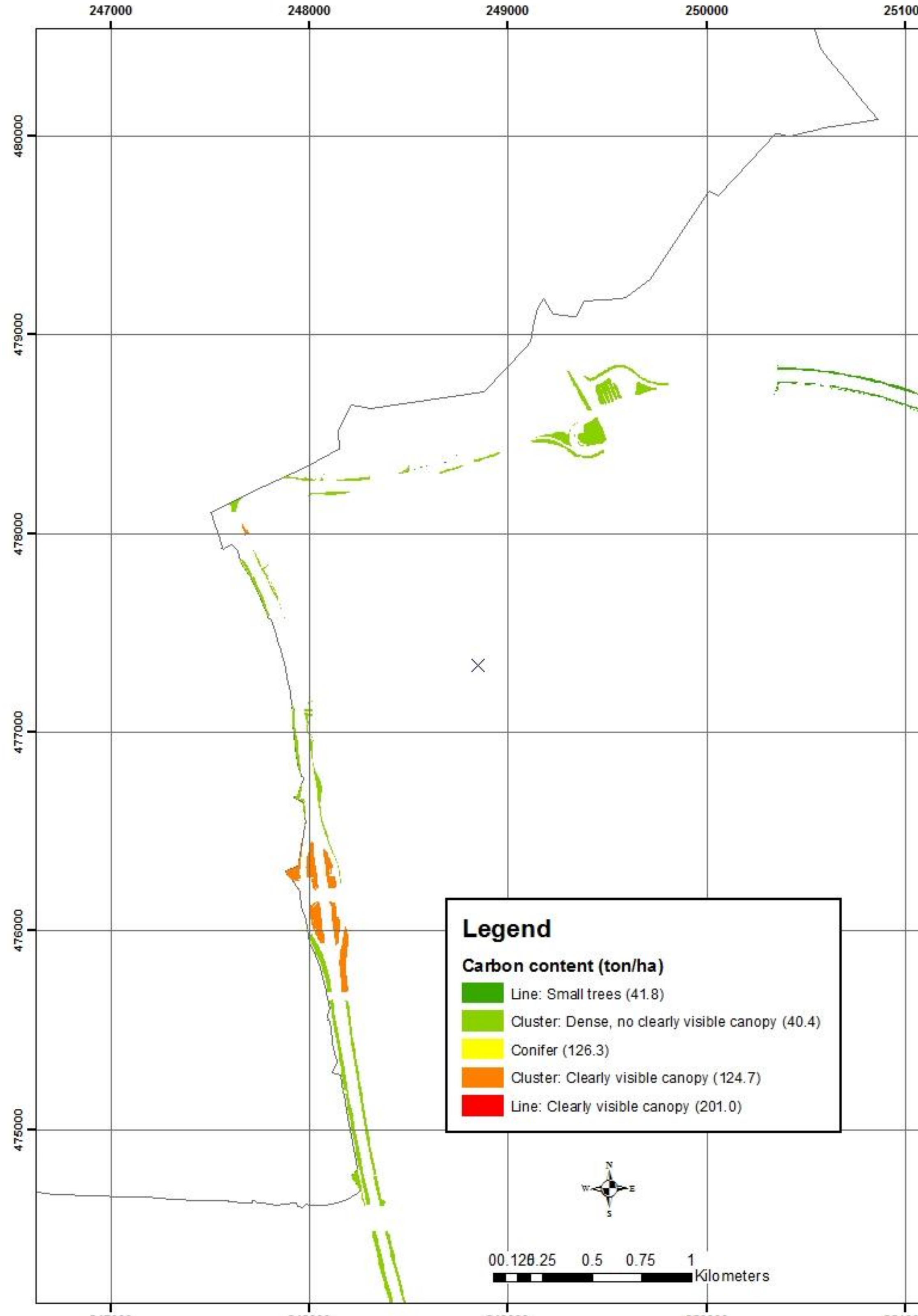


**Figure 16:** Map sheet 1 of the carbon map

### 3.7 Current carbon stock of woody roadside vegetation

Table 7 below shows the estimated current carbon stock of the woody roadside vegetation in Eastern Overijssel. With the estimated carbon stock per hectare and the total area of each visualized class, the current total carbon stock was calculated for each class.  A summation of the current carbon stocks of each class results in a total current carbon stock, about 8800 tons, of the woody roadside vegetation.

**Table 7:** Estimated current carbon stock of woody roadside vegetation

| Class | Total Area (ha) | Current total carbon (tons) |
|---|---|---|
| Conifer | 0.25 | 31.60 |
| Line: Small trees | 18.69 | 781.20 |
| Line: Clearly visible canopy | 21.27 | 4275.30 |
| Cluster: Clearly visible canopy | 10.55 | 1315.60 |
| Cluster: No clearly defined canopy | 59.17 | 2390.50 |
| **Total** | | 8794.20 |

### 3.8 Identified ecological corridors

Figure 17 below shows potential ecological corridors. The ecological corridors were mainly identified such that these portions of land may be planted with trees hence increasing biodiversity conservation and the carbon stock of the roadside woody vegetation. Figure 18 shows an example of such corridors. The rest are in Appendix 5.

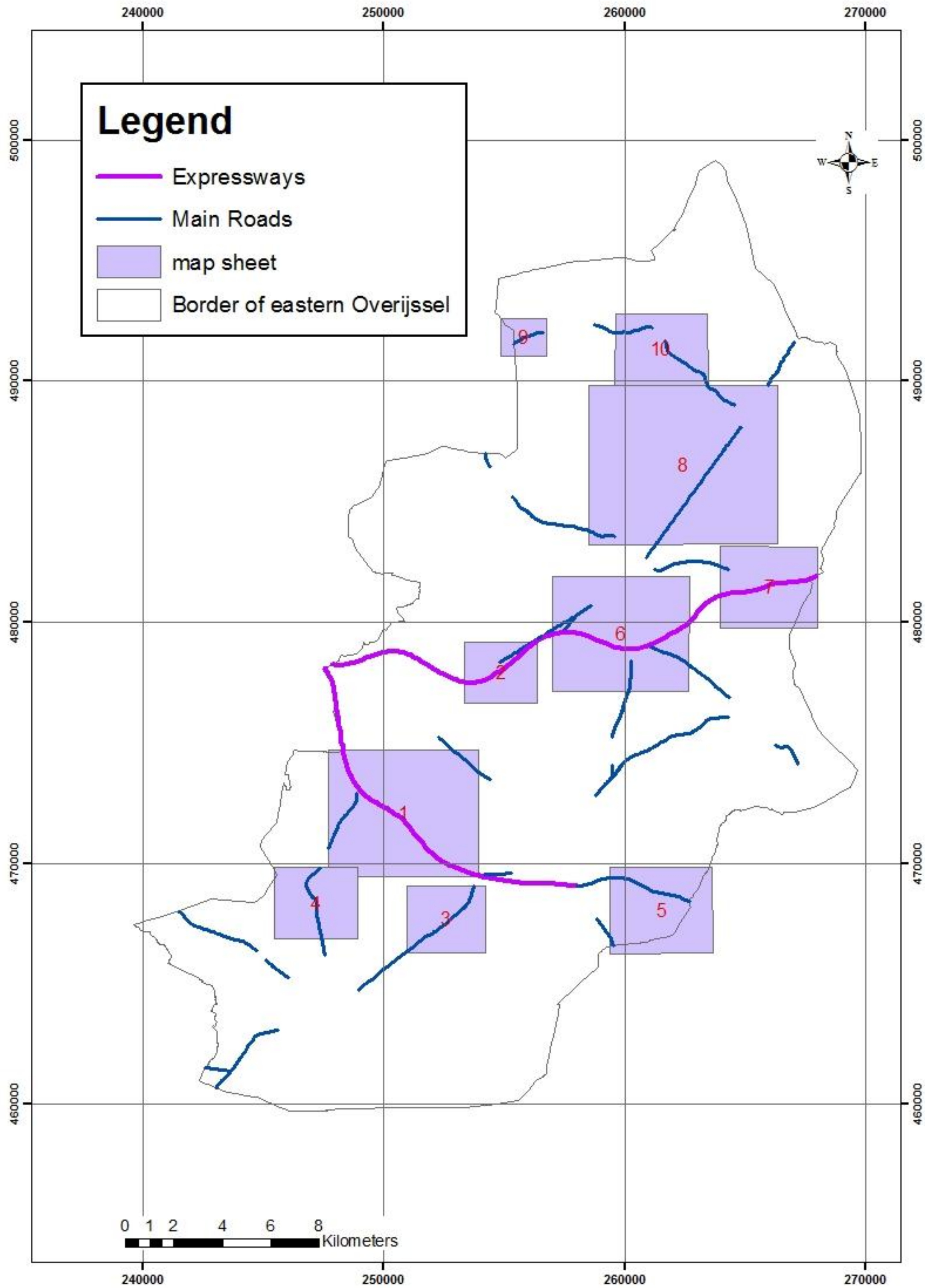


**Figure 17:** Identified potential ecological corridors in eastern Overijssel Province

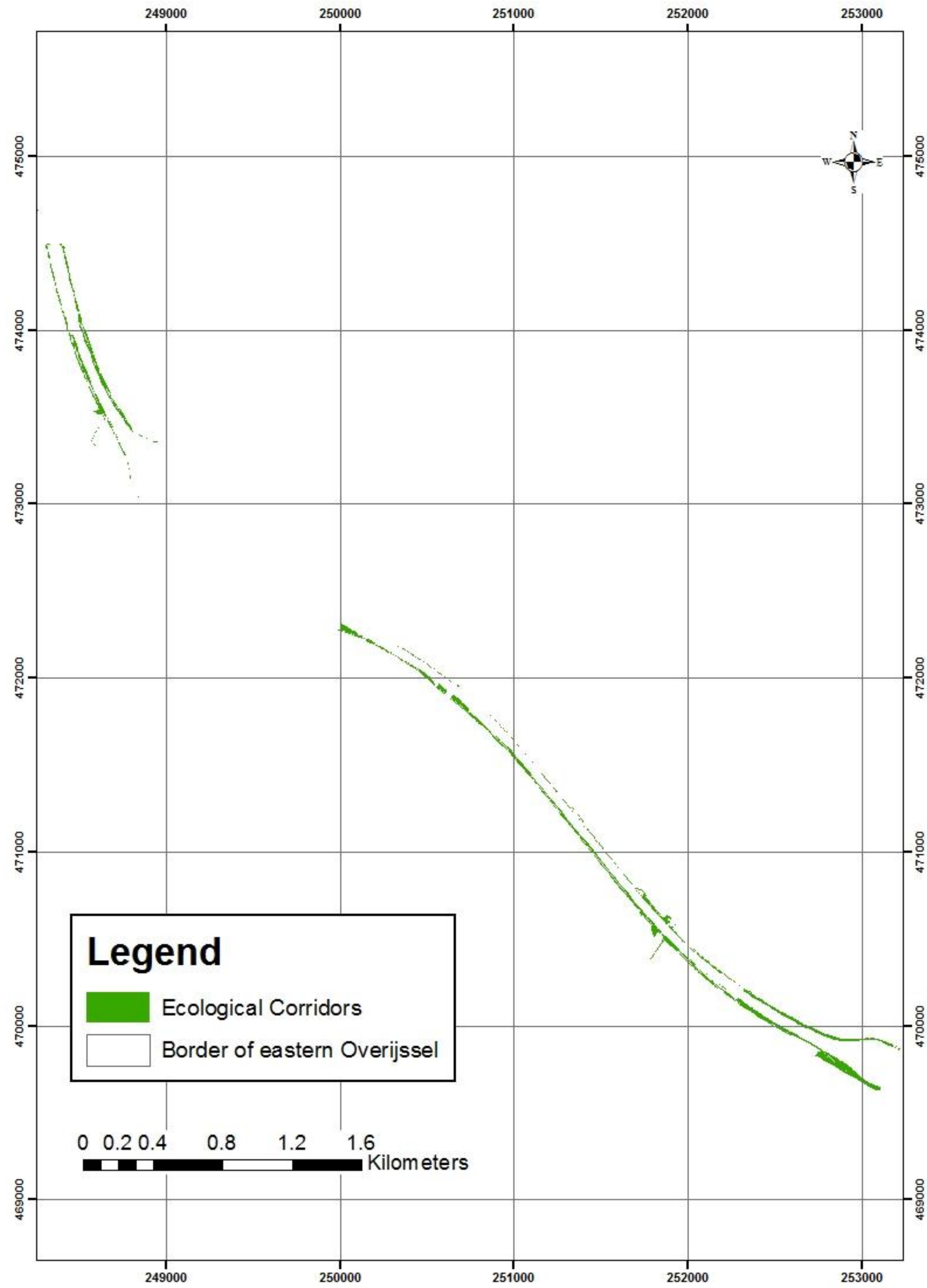


**Figure 18:** Map sheet 1 showing potential ecological corridors (available land)

### 3.9 Results from scenarios analyses

The following table is a summary of the carbon stock scenarios. The carbon stock estimates of scenario 1 are the increase (in tons) of the current woody roadside vegetation. The scenario 1 estimates act as a baseline for the respective scenario intervals. Therefore, the carbon estimates of scenario 2, 3, and 4 are additional carbon stock increases on top of scenario 1. When comparing the scenario of all *Quercus* plantings versus the scenario of mixed plantings, the all *Quercus* plantings estimated carbon stocks are 59% and 55% greater than the mixed plantings with respect to the scenario intervals. This is important because it illustrates that there is a noticeable difference between carbon stock estimates if a mixed planting of tree species is implemented. The difference in estimated carbon stocks of scenario 3, mixed tree plantings on all available land, and scenario 4, mixed tree plantings on ecological corridors, is based upon the amount of land that is planted with trees. The ecological corridors account for 26% of all available land for planting trees so the carbon stock estimates for scenario 4 are 26% of scenario 3's estimates.

**Table 8:** Estimated carbon stocks of the scenarios

| | Scenario Intervals (years) | Carbon stock increase (tons) |
|---|---|---|
| Scenario 1 (No additional plantings) | 10<br>40 | 10103<br>43715 |
| Scenario 2 (All available land with only *Quercus* plantings) | 10<br>40 | 377<br>6611 |
| Scenario 3 (All available land with mixed plantings) | 10<br>40 | 237<br>4263 |
| Scenario 4 (Ecological corridor with mixed plantings) | 10<br>40 | 62<br>1110 |

# 4. Discussion

“Human beings and computers have complementary strengths: humans are good at scanning large areas and recognizing objects, where as computers are good at optimizing, detailed delineation and repetition” (Quackenbush, 2004). In this study over 5000 Google images were downloaded and visual interpretation of woody vegetation into classes was done. Roads along the study area were also manually digitized. This whole process was time consuming but compensated for lack of high resolution images. This confirms what Baumgartner *et al*. (1999) stated: manual feature extraction harness the interpretation skills of the operator but can be time consuming and thus expensive to perform. According to Guindon (1999), humans have the ability to group simple features, such as points and lines, into meaningful structures as evidenced in this study. Humans also interpret imagery by evaluating a wide range of cues including both spectral and spatial patterns (Quackenbush, 2004). However, with high spatial resolution imagery, it is often possible to consider spatial patterns to a greater extent when looking for specific features (Quackenbush, 2004). For example it is possible to use structural information about roads (such as, width, linearity, or limitations on curvature) to distinguish them from other features that may be spectrally similar (Quackenbush, 2004). Many automated or semi-automated feature extraction procedures attempt to mimic the human interpretation process by incorporating both spectral and spatial information (Momm et al., 2009; Quackenbush, 2004).

Most studies in the past have focused mainly on assessing growing stock within notified forest areas (Rathore and Prasad, 2002). While the majority of such studies have focused on relationships between tree-species diversity and productivity (growth) in forests, this study explored the species composition of roadside woody vegetation and their carbon stocks while maintaining their ecosystem services. Currently, roadside vegetation’s ecosystem services are more adapted for aesthetic pleasure, biodiversity, and safety. Below is a detailed discussion of the results.

## 4.1 Available roadside woody vegetation land

The identified available land for planting trees shows that main roads have a higher percentage of available land than the available land for expressways. However, there are greater uncertainties of the area of roadside vegetation along the main roads. The uncertainty occurs because there was no boundary file for the main roads, but there was a boundary file for the expressway's managed roadside vegetation. There could be an overestimate or underestimate of current and available land along main roads due to using an average of the land (managed roadside) width being applied to the length of each main road. The main roads also have a higher percentage of identified land for ecological corridors. However, the available land has the same uncertainty as the identified available land. Finally, 26% of identified available land was identified as ecological corridors, which is more reasonable, in regards to current management plans, than planting all the available land with trees. The information can be helpful for management plans because it shows that land can be identified for future tree plantings.

## 4.2 Species distribution

The roadside woody vegetation species of the study area were not found in equal dominance. *Quercus robur* and *Quercus rubra* accounted for 49% and 14% respectively of all the trees sampled. Therefore, the *Quercus* species accounts for nearly two thirds of the trees in the study area. With one species accounting for such a large percentage, the biodiversity of the roadside vegetation trees is lacking. *Betula pendula* and *Fagus sylvatica* had the next highest percentage (19% and 12% respectively). In total, the four dominant species account for 92% of all trees sampled along the roadways, which further illustrates the lack of a more even distribution of trees species along the roadways. Although 14 tree species were identified, the uneven distribution of the species reveals that future management plans may want to better adopt a more diverse tree-planting design.

## 4.3 Estimated biomass per class

The biomass estimate for the visualized class: Conifer was simplistic because the class was composed of only *Pinus nigra*, therefore, comprising 100% of the biomass estimation. Next, classes *Line: small trees* and *Line: clearly visible canopy* were both dominated by the tree species *Quercus rubra* and *Quercus robur*. 88% of both classes' biomass was accounted for by the two *Quercus* species. In addition, the final two classes, *Cluster: clear canopy* and *Cluster: no clear canopy*, had 79% and 56% respectively biomass accounted for by *Quercus rubra* and *Quercus robur*. Therefore, the biomasses of the Quercus species are the majority biomass contributors to the roadside trees. This is expected since they account for nearly 62% of the trees sampled, however, three classes have greater biomasses attributed to the *Quercus spp*. The condition is that the *Quercus* species dominate the composition of the roadside trees as well as the biomass.

## 4.4 Wood density

Wood density plays a key role in ecological strategies and life history variation in woody plants (Martinez-Cabrera et al., 2009). Wood density, or the dry weight per unit volume of wood, is an important parameter that can be used in allometric equations that estimate tree biomass and carbon stocks from stem diameter values (Ketterings et al., 2001). Wood density varies with tree species, growth conditions and part of the tree measured (Ketterings et al., 2001). Wood density may also strongly depend on, location, climate, and possibly management (Ketterings et al., 2001).

In this case, Rijkwaterstraat should adopt a management strategy that favors the growing of tree species with a high wood density to further or better increase the carbon stock along roadside woody vegetation.

## 4.5 Carbon stock distribution

Schelhaas *et al*. (2004) provides guidelines for average standing biomass of different forest biomes in the world.  The guidelines show temperate forest have an average dry biomass of 113 (ton/ha) which results in 56.5 ton/ha of carbon.  A comparison to the study results reveal that the estimated carbon stocks per hectare are much higher, for example, 126.3, 124.7, and 201.0 tons/ha.  I believe the carbon stocks of the roadside vegetation are significantly higher because much of the trees biomass was actually hanging outside of the study area (see figure 19).  The study area land was identified as the only roadside vegetation land.  Since the trees' crown covers overhung the study area, this may have been the main cause for overestimation of carbon stocks in the roadside woody vegetation.

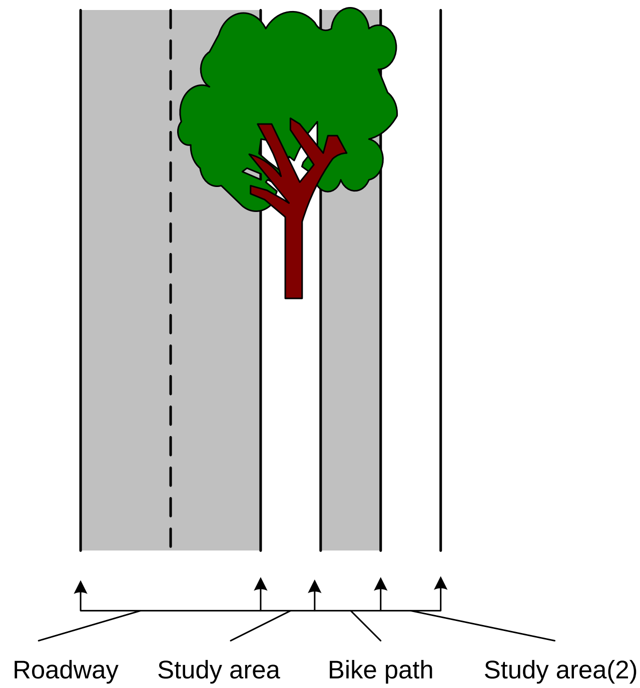


**Figure 19:** Illustration of carbon stock overestimation

In addition to the overhang factor, other assumptions (such as the allometric equations not relevant to site conditions) made could have influenced the above normal carbon stock estimates.

### 4.6 Potential ecological corridors

The potential ecological corridors accounted for about 26% of the land along roadways that were identified as available land for additional tree plantings. The results reveal that there are lands along the roadside that can be converted into ecological corridors. Not only were potential ecological corridors identified, but those lands identified attempt to take into account one of the current management ideas, replicating the current landscape with new plantings. This is important because if management of roadside vegetation wants to plant more trees then they should take into account the possibility of identifying ecological corridors therefore increasing the effect of planting trees other than aesthetics and landscaping.

## 4.7 Developed scenarios

The findings from the study, suggest that scenarios of selective planting of species could lead to varying amounts of carbon stocks. A comparison between scenarios 2, where all available land is planted with only *Quercus* species, and scenario 3, where all available land is planted with a mixture of species, reveal that selective planting does not necessarily lead to lower carbon content. Scenario 2 is estimated to have 6611 tons of carbon versus 4263 tons of carbon stock in newly planted roadside vegetation. During the time period of forty years, scenario 2 has about 35% more carbon stock. With carbon credit prices around €12-12.5 in August 2009 (Singh, 2009) the 35% difference would equate between €28,176 - €29,350. Carbon credit prices are expected to rise in the future (Singh, 2009) therefore greater amounts in carbon crediting are possible. However, there is lack of species diversity in scenario 2, only two *Quercus* species, compared to scenario three's five species. Although the third scenario does not maximize the potential carbon stock of the roadside vegetation, it does accomplish two ecosystem goals by increasing carbon stock and biodiversity. Furthermore, different tree species can lead to an increase in biodiversity of other animal and insect life.

The fourth scenario, establishing ecological corridors, involves three main ecosystem services: carbon stocks, biodiversity, and landscape values. Scenario 4 does not maximize the carbon stocks of all available land for potential tree plantings because not all of the land was identified as an ecological corridor. However, the additional 1110 tons (over 40 year scenario interval) of carbon equates to between €13,320 and €13,875 using the August 2009 prices. In addition, the species of trees chosen are not just species that result in the highest carbon stocks, rather the trees are the same species as in scenario three. With a mix of tree species, scenario 4 increases biodiversity. Scenario 4 also accomplishes the ecosystem service of aesthetic landscaping by not planting all available land with trees.

Since the scenario results depend upon yield tables entered into the $CO_2$ Fix model, the growth and therefore the expected future carbon stock cannot be certain. The increase in carbon stock cannot be certain because the yield tables are site specific and do not necessarily represent the study area well. That is a reason the findings should be used with caution.

# 5. Conclusions

As in many agricultural landscapes, measures will have to be taken if roadside vegetation-based carbon stocks are to be maintained along main roads of eastern Overijssel Province. The results from the study suggests that maintaining roadside wood vegetation would lead to an increase in carbon stocks as well as biodiversity.

In terms of planting roadside woody vegetation, the results indicated that information on species-specific growth rates and life spans would allow species level management in both roadside vegetation conservation and reforestation projects to be optimized in eastern Overijssel. In the meantime, managers of carbon sink projects will have to implement an adaptive management approach, combining inventory data with information on species-specific uses.

The overestimated carbon stocks of roadside woody vegetation could be because of the effect of crown cover hanging over the study area and other factors. In addition, I did not correct for pruning because of its complexity and given the nature of the study. So the carbon stock estimates of this study should be used with caution. Furthermore, it should be noted that mapping roadside carbon stocks by tons per hectare may not be a reasonable way. Estimating carbon stocks by tons per kilometer length of road may be a better option. This option may be more applicable because it reduces the need for topographic information about the area of the roadside verges or how the area should be determined.

The type of analysis that I report here could allow managers to prioritize species for management using (1) species' overall contribution to C storage on roadsides; (2) their relative abundance; and (3) their per capita contribution to C storage. For example, in roadside wood vegetation (*Fraxinus excelsior* has a 0.65 wood density) store significantly more C per individual than other species. However, the amount of time the tree will be allowed to grow will have a significant impact as well. Therefore, both carbon content percentage and potential duration of the tree life must be taken into account. Removing or conserving these individuals in roadsides will therefore have important effects on overall carbon stocks.

Although the current management plan of roadside vegetation in Eastern Overijssel takes into account many factors, there is a need to incorporate the carbon stock of the roadside vegetation. Although the carbon estimates from the study may not be accurate, this study shows that carbon stock increase is possible. The increase in carbon stock could be significant if applied to the Netherlands' 132,888 km of roadways and 2582 km of expressways. By planting more trees in the roadside, there can be an increase in carbon stock, in biodiversity, and in vegetation aesthetics.

# 6. Recommendations

Due to linear and fine scale of roadside vegetation, there is the possibility of mapping roadside vegetation with spectral imaging if the resolution is high enough. As resolutions become higher and images more readily available, spectral imaging may be a more simple process and lead to better and quicker results.

High resolution images could be used with object recognition software for identifying trees along the roadside. Object recognition software could be explored to reduce the tedious process of manual digitizing as evidenced in the study.

A study could be carried out to quantify the affect of pruning of roadside trees on biomass estimation and what difference it may have with trees that are not pruned.

An increase in woody roadside vegetation also requires different management than the replaced ground vegetation; therefore, management issues and costs could be explored if there is an increase in roadside woody vegetation.

Further research could also be carried out on the carbon content of roadside vegetation. With higher levels of atmospheric $CO_2$, due to automobile traffic, roadside trees could have a higher carbon fraction than a tree in a more natural environment.

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## Appendix 1: Sample tree measurements and carbon estimated

| Plot ID | Tree Number | Species Name | Common Name | DBH (cm) | Carbon (kg) |
|---|---|---|---|---|---|
| A1_03 | 1 | Fagus sylvatica | European Beech | 15.1 | 26.04234 |
| A1_03 | 2 | Fagus sylvatica | European Beech | 9.7 | 8.236718 |
| A1_03 | 3 | Fagus sylvatica | European Beech | 10.9 | 11.15597 |
| A1_03 | 4 | Betula pendula | European White Birch | 8.9 | 2.091865 |
| A1_03 | 5 | Betula pendula | European White Birch | 17.2 | 10.86397 |
| A1_03 | 6 | Betula pendula | European White Birch | 13.4 | 5.819533 |
| A1_03 | 7 | Quercus palustris | Pin Oak | 8.8 | 1.302662 |
| A1_03 | 8 | Pinus sylvestris | Scots Pine | 6.1 | 0.943465 |
| A1_03 | 9 | Pinus sylvestris | Scots Pine | 7.3 | 1.122342 |
| A1_03 | 10 | Pinus sylvestris | Scots Pine | 10.1 | 2.954034 |
| A1_03 | 11 | Pinus sylvestris | Scots Pine | 6.7 | 0.948402 |
| A1_03 | 12 | Pinus sylvestris | Scots Pine | 5.8 | 0.854523 |
| A1_04 | 1 | Fagus sylvatica | European Beech | 8.8 | 6.393819 |
| A1_04 | 2 | Fagus sylvatica | European Beech | 9.4 | 7.590432 |
| A1_04 | 3 | Fagus sylvatica | European Beech | 8.7 | 6.206553 |
| A1_04 | 4 | Fagus sylvatica | European Beech | 7.2 | 3.793873 |
| A1_04 | 5 | Quercus robur | English Oak | 10.1 | 17.4939 |
| A1_04 | 6 | Quercus robur | English Oak | 7.1 | 8.228708 |
| A1_04 | 7 | Quercus robur | English Oak | 6.9 | 7.740622 |
| A1_04 | 8 | Quercus robur | English Oak | 8.4 | 11.79224 |
| A1_04 | 9 | Quercus robur | English Oak | 9.6 | 15.69276 |
| A1_04 | 10 | Quercus robur | English Oak | 13.6 | 33.06831 |
| A1_04 | 11 | Quercus robur | English Oak | 7.3 | 8.732723 |
| A1_04 | 12 | Quercus robur | English Oak | 8.8 | 13.02662 |
| A1_04 | 13 | Quercus robur | English Oak | 8.6 | 12.40125 |
| A1_04 | 14 | Quercus robur | English Oak | 7.3 | 8.732723 |
| A1_04 | 15 | Quercus robur | English Oak | 10.6 | 19.39962 |
| A1_04 | 16 | Quercus robur | English Oak | 9.8 | 16.40071 |
| A1_04 | 17 | Quercus robur | English Oak | 7.4 | 8.990724 |
| A1_04 | 18 | Quercus robur | English Oak | 7.4 | 8.990724 |
| A1_04 | 19 | Quercus robur | English Oak | 11.8 | 24.4043 |
| A1_04 | 20 | Quercus robur | English Oak | 9.2 | 14.32665 |
| A1_04 | 21 | Quercus robur | English Oak | 13.1 | 30.52104 |
| A1_04 | 22 | Quercus robur | English Oak | 8.1 | 10.9093 |
| A1_05 | 1 | Fagus sylvatica | European Beech | 7.5 | 4.218862 |

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|---|---|---|---|---|---|
| A1_05 | 2 | Fagus sylvatica | European Beech | 15.3 | 26.94904 |
| A1_05 | 3 | Fagus sylvatica | European Beech | 12.9 | 17.29039 |
| A1_05 | 4 | Fagus sylvatica | European Beech | 12.3 | 15.27581 |
| A1_05 | 5 | Fagus sylvatica | European Beech | 20.5 | 57.68099 |
| A1_05 | 6 | Fagus sylvatica | European Beech | 14.5 | 23.43576 |
| A1_05 | 7 | Fagus sylvatica | European Beech | 22.8 | 76.0588 |
| A1_05 | 8 | Fagus sylvatica | European Beech | 8.2 | 5.320969 |
| A1_05 | 9 | Fagus sylvatica | European Beech | 7.6 | 4.366737 |
| A1_05 | 10 | Fagus sylvatica | European Beech | 7.1 | 3.658339 |
| A1_05 | 11 | Fagus sylvatica | European Beech | 8.2 | 5.320969 |
| A1_05 | 12 | Fagus sylvatica | European Beech | 14.6 | 23.85848 |
| A1_05 | 13 | Fagus sylvatica | European Beech | 26.7 | 114.6877 |
| A1_05 | 14 | Fagus sylvatica | European Beech | 7.3 | 3.932454 |
| A1_05 | 15 | Fagus sylvatica | European Beech | 20.5 | 57.68099 |
| A1_05 | 16 | Fagus sylvatica | European Beech | 10.1 | 9.149573 |
| A1_05 | 17 | Fagus sylvatica | European Beech | 9.2 | 7.177498 |
| A1_05 | 18 | Fagus sylvatica | European Beech | 10 | 8.915812 |
| A1_05 | 19 | Fagus sylvatica | European Beech | 16.6 | 33.31671 |
| A1_05 | 20 | Fagus sylvatica | European Beech | 11.2 | 11.97228 |
| A1_05 | 21 | Fagus sylvatica | European Beech | 6.9 | 3.396311 |
| A1_05 | 22 | Fagus sylvatica | European Beech | 22.2 | 70.96186 |
| A1_05 | 23 | Fagus sylvatica | European Beech | 25.9 | 105.9628 |
| A1_05 | 24 | Fagus sylvatica | European Beech | 23.6 | 83.1965 |
| A1_05 | 25 | Fagus sylvatica | European Beech | 14.4 | 23.01769 |
| A1_05 | 26 | Fagus sylvatica | European Beech | 6.8 | 3.269765 |
| A1_05 | 27 | Fagus sylvatica | European Beech | 11.5 | 12.82437 |
| A1_05 | 28 | Fagus sylvatica | European Beech | 20.6 | 58.4157 |
| A1_05 | 29 | Fagus sylvatica | European Beech | 7.7 | 4.517761 |
| A1_05 | 30 | Populus deltoides | Eastern poplar | 26.1 | 30.61541 |
| A1_05 | 31 | Populus deltoides | Eastern poplar | 24.5 | 24.80493 |
| A1_05 | 32 | Populus deltoides | Eastern poplar | 5.2 | 0.537165 |
| A1_05 | 33 | Betula pendula | European White Birch | 10.8 | 3.393516 |
| A1_05 | 34 | Betula pendula | European White Birch | 27.1 | 33.85833 |
| A1_05 | 35 | Quercus robur | English Oak | 10 | 17.12532 |
| A1_05 | 36 | Quercus robur | English Oak | 6.9 | 7.740622 |
| A1_05 | 37 | Quercus robur | English Oak | 12.2 | 26.2089 |
| A1_05 | 38 | Quercus robur | English Oak | 13.8 | 34.11772 |
| A1_05 | 39 | Quercus robur | English Oak | 10.4 | 18.62474 |
| A1_05 | 40 | Quercus robur | English Oak | 10.7 | 19.79338 |
| A1_05 | 41 | Quercus robur | English Oak | 13.3 | 31.5269 |
| A1_05 | 42 | Quercus robur | English Oak | 9.6 | 15.69276 |

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|---|---|---|---|---|---|
| A1_05 | 43 | Quercus robur | English Oak | 9.3 | 14.66197 |
| A1_05 | 44 | Quercus robur | English Oak | 10.6 | 19.39962 |
| A1_05 | 45 | Quercus robur | English Oak | 12.2 | 26.2089 |
| A1_05 | 46 | Quercus robur | English Oak | 9.2 | 14.32665 |
| A1_05 | 47 | Quercus robur | English Oak | 11.5 | 23.09575 |
| A1_05 | 48 | Quercus robur | English Oak | 10 | 17.12532 |
| A1_05 | 49 | Quercus robur | English Oak | 13.6 | 33.06831 |
| A1_05 | 50 | Quercus robur | English Oak | 9.6 | 15.69276 |
| A1_05 | 51 | Quercus robur | English Oak | 9.5 | 15.34501 |
| A1_05 | 52 | Quercus robur | English Oak | 10.1 | 17.4939 |
| A1_05 | 53 | Quercus robur | English Oak | 9.9 | 16.76093 |
| A1_05 | 54 | Quercus robur | English Oak | 6.8 | 7.502532 |
| A1_05 | 55 | Quercus robur | English Oak | 13.3 | 31.5269 |
| A1_05 | 56 | Quercus robur | English Oak | 13.4 | 32.03635 |
| A1_05 | 57 | Quercus robur | English Oak | 8.4 | 11.79224 |
| A1_05 | 58 | Quercus robur | English Oak | 10.3 | 18.2436 |
| A1_05 | 59 | Quercus robur | English Oak | 12.1 | 25.75132 |
| A1_05 | 60 | Quercus robur | English Oak | 13.6 | 33.06831 |
| A1_05 | 61 | Quercus robur | English Oak | 9.4 | 15.00142 |
| A1_05 | 62 | Quercus robur | English Oak | 7.2 | 8.478721 |
| A1_05 | 63 | Quercus robur | English Oak | 15.7 | 44.96391 |
| A1_05 | 64 | Quercus robur | English Oak | 11.6 | 23.52767 |
| A1_05 | 65 | Quercus robur | English Oak | 11.4 | 22.6681 |
| A1_05 | 66 | Quercus robur | English Oak | 8.2 | 11.19955 |
| A1_06 | 1 | Fagus sylvatica | European Beech | 6.7 | 3.146165 |
| A1_06 | 2 | Betula pendula | European White Birch | 26.5 | 32.01499 |
| A1_06 | 3 | Quercus robur | English Oak | 6.1 | 5.94627 |
| A1_06 | 4 | Quercus robur | English Oak | 5.3 | 4.401383 |
| A1_06 | 5 | Quercus robur | English Oak | 12.1 | 25.75132 |
| A1_06 | 6 | Quercus robur | English Oak | 7.3 | 8.732723 |
| A1_06 | 7 | Quercus robur | English Oak | 5.7 | 5.142934 |
| A1_06 | 8 | Quercus robur | English Oak | 10.9 | 20.59356 |
| A1_06 | 9 | Quercus robur | English Oak | 13.4 | 32.03635 |
| A1_06 | 10 | Quercus robur | English Oak | 7.7 | 9.788788 |
| A1_06 | 11 | Quercus robur | English Oak | 11.4 | 22.6681 |
| A1_06 | 12 | Quercus robur | English Oak | 7.5 | 9.25273 |
| A1_06 | 13 | Quercus robur | English Oak | 10.3 | 18.2436 |
| A1_06 | 14 | Quercus robur | English Oak | 12.8 | 29.04478 |
| A1_06 | 15 | Quercus robur | English Oak | 9.1 | 13.99547 |
| A1_06 | 16 | Quercus robur | English Oak | 8.4 | 11.79224 |
| A1_08 | 1 | Fraxinus excelsior | Common Ash | 5.8 | 5.782782 |

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|---|---|---|---|---|---|
| A1_08 | 2 | Fraxinus excelsior | Common Ash | 5.1 | 4.39138 |
| A1_08 | 3 | Fraxinus excelsior | Common Ash | 6.3 | 6.902234 |
| A1_08 | 4 | Fraxinus excelsior | Common Ash | 7.2 | 9.185281 |
| A1_08 | 5 | Fraxinus excelsior | Common Ash | 6.8 | 8.127743 |
| A1_08 | 6 | Fraxinus excelsior | Common Ash | 5.4 | 4.962763 |
| A1_08 | 7 | Populus deltoides | Eastern poplar | 15.9 | 8.679858 |
| A1_08 | 8 | Betula pendula | European White Birch | 22.7 | 21.74091 |
| A1_08 | 9 | Betula pendula | European White Birch | 16.3 | 9.497898 |
| A1_08 | 10 | Betula pendula | European White Birch | 16.2 | 9.352872 |
| A1_08 | 11 | Betula pendula | European White Birch | 10.6 | 3.238561 |
| A1_08 | 12 | Betula pendula | European White Birch | 15.9 | 8.925801 |
| A1_08 | 13 | Betula pendula | European White Birch | 12.4 | 4.793664 |
| A1_08 | 14 | Betula pendula | European White Birch | 12.9 | 5.291687 |
| A1_08 | 15 | Betula pendula | European White Birch | 13.8 | 6.263668 |
| A1_08 | 16 | Betula pendula | European White Birch | 15.7 | 8.647716 |
| A1_08 | 17 | Betula pendula | European White Birch | 10.6 | 3.238561 |
| A1_08 | 18 | Betula pendula | European White Birch | 19.6 | 15.06014 |
| A1_08 | 19 | Betula pendula | European White Birch | 20.3 | 16.44125 |
| A1_08 | 20 | Betula pendula | European White Birch | 21.9 | 19.87547 |
| A1_08 | 21 | Betula pendula | European White Birch | 19.4 | 14.67883 |
| A1_08 | 22 | Quercus robur | English Oak | 5.5 | 4.764474 |
| A1_08 | 23 | Quercus robur | English Oak | 6.7 | 7.268401 |
| A1_08 | 24 | Quercus robur | English Oak | 5 | 3.88539 |
| A1_08 | 25 | Quercus robur | English Oak | 13.6 | 33.06831 |
| A1_08 | 26 | Quercus robur | English Oak | 5.6 | 4.951778 |
| A1_08 | 27 | Quercus robur | English Oak | 13.9 | 34.64898 |
| A1_08 | 28 | Quercus robur | English Oak | 9.4 | 15.00142 |
| A1_08 | 29 | Quercus robur | English Oak | 13.2 | 31.0218 |
| A1_08 | 30 | Quercus robur | English Oak | 6.3 | 6.371293 |
| A1_08 | 31 | Quercus robur | English Oak | 5.6 | 4.951778 |
| A1_09 | 1 | Fagus sylvatica | European Beech | 5.7 | 2.066291 |
| A1_09 | 2 | Fagus sylvatica | European Beech | 5.1 | 1.547216 |
| A1_09 | 3 | Quercus robur | English Oak | 9.7 | 16.04465 |
| A1_09 | 4 | Quercus robur | English Oak | 13.1 | 30.52104 |
| A1_09 | 5 | Quercus robur | English Oak | 11.4 | 22.6681 |
| A1_09 | 6 | Quercus robur | English Oak | 5 | 3.88539 |
| A1_09 | 7 | Quercus robur | English Oak | 12.8 | 29.04478 |
| A1_09 | 8 | Quercus robur | English Oak | 5.4 | 4.581012 |
| A1_09 | 9 | Quercus robur | English Oak | 11.1 | 21.41065 |
| A1_09 | 10 | Quercus robur | English Oak | 6.8 | 7.502532 |
| A1_09 | 11 | Quercus robur | English Oak | 6.6 | 7.038219 |

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|---|---|---|---|---|---|
| A1_09 | 12 | Quercus robur | English Oak | 12.3 | 26.67078 |
| A1_09 | 13 | Quercus robur | English Oak | 11.5 | 23.09575 |
| A1_09 | 14 | Quercus robur | English Oak | 6.9 | 7.740622 |
| A1_09 | 15 | Quercus robur | English Oak | 6 | 5.739611 |
| A1_09 | 16 | Quercus robur | English Oak | 6.3 | 6.371293 |
| A1_09 | 17 | Quercus robur | English Oak | 8.7 | 12.71189 |
| A1_09 | 18 | Quercus robur | English Oak | 7.9 | 10.34096 |
| A1_09 | 19 | Quercus robur | English Oak | 5.8 | 5.337952 |
| A1_09 | 20 | Quercus robur | English Oak | 5.6 | 4.951778 |
| A1_09 | 21 | Quercus robur | English Oak | 8.6 | 12.40125 |
| A1_09 | 22 | Quercus robur | English Oak | 11.6 | 23.52767 |
| A1_09 | 23 | Quercus robur | English Oak | 9.2 | 14.32665 |
| A1_09 | 24 | Quercus robur | English Oak | 8.8 | 13.02662 |
| A1_09 | 25 | Quercus robur | English Oak | 5.3 | 4.401383 |
| A1_09 | 26 | Quercus robur | English Oak | 5.9 | 5.536841 |
| A1_09 | 27 | Quercus robur | English Oak | 8.6 | 12.40125 |
| A1_09 | 28 | Quercus robur | English Oak | 9.7 | 16.04465 |
| A1_09 | 29 | Quercus robur | English Oak | 6 | 5.739611 |
| A1_09 | 30 | Quercus robur | English Oak | 8.7 | 12.71189 |
| A1_09 | 31 | Quercus robur | English Oak | 8.8 | 13.02662 |
| A1_09 | 32 | Quercus robur | English Oak | 5.4 | 4.581012 |
| A1_09 | 33 | Quercus robur | English Oak | 13.6 | 33.06831 |
| A1_09 | 34 | Quercus robur | English Oak | 8 | 10.6231 |
| A1_09 | 35 | Quercus robur | English Oak | 5.8 | 5.337952 |
| A1_09 | 36 | Quercus robur | English Oak | 16.8 | 51.97574 |
| A1_09 | 37 | Quercus robur | English Oak | 10.9 | 20.59356 |
| A1_09 | 38 | Quercus robur | English Oak | 10.3 | 18.2436 |
| A1_09 | 39 | Quercus robur | English Oak | 7.9 | 10.34096 |
| A1_09 | 40 | Quercus robur | English Oak | 8.4 | 11.79224 |
| A1_09 | 41 | Quercus robur | English Oak | 11.2 | 21.82556 |
| A1_09 | 42 | Quercus robur | English Oak | 7.4 | 8.990724 |
| A1_09 | 43 | Quercus robur | English Oak | 14.3 | 36.81781 |
| A1_09 | 44 | Quercus robur | English Oak | 13.6 | 33.06831 |
| A1_09 | 45 | Quercus robur | English Oak | 6.8 | 7.502532 |
| A1_09 | 46 | Quercus robur | English Oak | 14 | 35.18461 |
| A1_09 | 47 | Quercus robur | English Oak | 12.1 | 25.75132 |
| A1_09 | 48 | Quercus robur | English Oak | 7.2 | 8.478721 |
| A1_09 | 49 | Quercus robur | English Oak | 7 | 7.982677 |
| A1_09 | 50 | Quercus robur | English Oak | 6.8 | 7.502532 |
| A1_09 | 51 | Quercus robur | English Oak | 6.6 | 7.038219 |
| A1_09 | 52 | Quercus robur | English Oak | 6.4 | 6.589674 |

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| A1_09 | 53 | Quercus robur | English Oak | 5.3 | 4.401383 |
| A1_09 | 54 | Quercus robur | English Oak | 8.3 | 11.49386 |
| A1_09 | 55 | Quercus robur | English Oak | 14.1 | 35.72463 |
| A1_09 | 56 | Quercus robur | English Oak | 7.9 | 10.34096 |
| A1_09 | 57 | Quercus robur | English Oak | 11.4 | 22.6681 |
| A1_09 | 58 | Quercus robur | English Oak | 6.1 | 5.94627 |
| A1_10 | 1 | Betula pendula | European White Birch | 8.9 | 2.091865 |
| A1_10 | 2 | Betula pendula | European White Birch | 5.2 | 0.545731 |
| A1_10 | 3 | Betula pendula | European White Birch | 7.1 | 1.18896 |
| A1_10 | 4 | Betula pendula | European White Birch | 7.8 | 1.504088 |
| A1_10 | 5 | Betula pendula | European White Birch | 5.8 | 0.717064 |
| A1_10 | 6 | Betula pendula | European White Birch | 7.1 | 1.18896 |
| A1_10 | 7 | Betula pendula | European White Birch | 6.2 | 0.847185 |
| A1_10 | 8 | Betula pendula | European White Birch | 8.4 | 1.810286 |
| A1_10 | 9 | Betula pendula | European White Birch | 8.5 | 1.864654 |
| A1_10 | 10 | Betula pendula | European White Birch | 8.6 | 1.91999 |
| A1_10 | 11 | Betula pendula | European White Birch | 7.6 | 1.409505 |
| A1_10 | 12 | Betula pendula | European White Birch | 8 | 1.602382 |
| A1_10 | 13 | Betula pendula | European White Birch | 5.4 | 0.599737 |
| A1_10 | 14 | Betula pendula | European White Birch | 12 | 4.416325 |
| A1_10 | 15 | Betula pendula | European White Birch | 7 | 1.14753 |
| A1_10 | 16 | Betula pendula | European White Birch | 9.2 | 2.272656 |
| A1_10 | 17 | Betula pendula | European White Birch | 6.1 | 0.813431 |
| A1_10 | 18 | Betula pendula | European White Birch | 8.6 | 1.91999 |
| A1_10 | 19 | Betula pendula | European White Birch | 8.5 | 1.864654 |
| A1_10 | 20 | Betula pendula | European White Birch | 5.2 | 0.545731 |
| A1_10 | 21 | Betula pendula | European White Birch | 8.9 | 2.091865 |
| A1_10 | 22 | Betula pendula | European White Birch | 8.7 | 1.976301 |
| A1_10 | 23 | Betula pendula | European White Birch | 6.8 | 1.0673 |
| A1_10 | 24 | Betula pendula | European White Birch | 6.6 | 0.990533 |
| A1_10 | 25 | Betula pendula | European White Birch | 10.3 | 3.014226 |
| A1_10 | 26 | Betula pendula | European White Birch | 8.6 | 1.91999 |
| A1_10 | 27 | Betula pendula | European White Birch | 9.5 | 2.462512 |
| A1_10 | 28 | Betula pendula | European White Birch | 8.6 | 1.91999 |
| A1_10 | 29 | Betula pendula | European White Birch | 6.2 | 0.847185 |
| A1_10 | 30 | Betula pendula | European White Birch | 7 | 1.14753 |
| A1_10 | 31 | Betula pendula | European White Birch | 9 | 2.15113 |
| A1_10 | 32 | Betula pendula | European White Birch | 5 | 0.494753 |
| A1_10 | 33 | Betula pendula | European White Birch | 10.8 | 3.393516 |
| A1_10 | 34 | Betula pendula | European White Birch | 7.5 | 1.363589 |
| A1_10 | 35 | Betula pendula | European White Birch | 8.8 | 2.03359 |

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| A1_10 | 36 | Betula pendula | European White Birch | 7.8 | 1.504088 |
| A1_10 | 37 | Betula pendula | European White Birch | 7 | 1.14753 |
| A1_10 | 38 | Betula pendula | European White Birch | 6.8 | 1.0673 |
| A1_10 | 39 | Betula pendula | European White Birch | 7.6 | 1.409505 |
| A1_10 | 40 | Betula pendula | European White Birch | 5.6 | 0.656829 |
| A1_10 | 41 | Betula pendula | European White Birch | 6.4 | 0.917179 |
| A1_10 | 42 | Betula pendula | European White Birch | 5.1 | 0.519867 |
| A1_10 | 43 | Betula pendula | European White Birch | 8.3 | 1.756881 |
| A1_10 | 44 | Betula pendula | European White Birch | 13.6 | 6.039151 |
| A1_10 | 45 | Betula pendula | European White Birch | 10 | 2.799483 |
| A1_10 | 46 | Betula pendula | European White Birch | 9.2 | 2.272656 |
| A1_10 | 47 | Betula pendula | European White Birch | 7.4 | 1.318583 |
| A1_10 | 48 | Betula pendula | European White Birch | 10 | 2.799483 |
| A1_10 | 49 | Betula pendula | European White Birch | 11.8 | 4.234578 |
| A1_10 | 50 | Betula pendula | European White Birch | 9.7 | 2.594192 |
| A1_10 | 51 | Betula pendula | European White Birch | 10.7 | 3.315496 |
| A1_10 | 52 | Betula pendula | European White Birch | 13.4 | 5.819533 |
| A1_12 | 1 | Fagus sylvatica | European Beech | 9.9 | 8.685765 |
| A1_12 | 2 | Fagus sylvatica | European Beech | 11.5 | 12.82437 |
| A1_12 | 3 | Fagus sylvatica | European Beech | 9.2 | 7.177498 |
| A1_12 | 4 | Fagus sylvatica | European Beech | 8 | 4.989971 |
| A1_12 | 5 | Fagus sylvatica | European Beech | 10.1 | 9.149573 |
| A1_12 | 6 | Fagus sylvatica | European Beech | 12.6 | 16.2639 |
| A1_12 | 7 | Fagus sylvatica | European Beech | 8.7 | 6.206553 |
| A1_12 | 8 | Fagus sylvatica | European Beech | 8.9 | 6.584523 |
| A1_12 | 9 | Fagus sylvatica | European Beech | 12.9 | 17.29039 |
| A1_12 | 10 | Fagus sylvatica | European Beech | 13.3 | 18.71971 |
| A1_12 | 11 | Fagus sylvatica | European Beech | 11 | 11.42413 |
| A1_12 | 12 | Fagus sylvatica | European Beech | 14.6 | 23.85848 |
| A1_12 | 13 | Fagus sylvatica | European Beech | 11.6 | 13.11645 |
| A1_12 | 14 | Fagus sylvatica | European Beech | 7.3 | 3.932454 |
| A1_12 | 15 | Fagus sylvatica | European Beech | 13.3 | 18.71971 |
| A1_12 | 16 | Fagus sylvatica | European Beech | 14.8 | 24.7179 |
| A1_12 | 17 | Fagus sylvatica | European Beech | 7.1 | 3.658339 |
| A1_12 | 18 | Fagus sylvatica | European Beech | 10.7 | 10.63134 |
| A1_12 | 19 | Fagus sylvatica | European Beech | 14.3 | 22.60424 |
| A1_12 | 20 | Fagus sylvatica | European Beech | 6.5 | 2.907693 |
| A1_12 | 21 | Fagus sylvatica | European Beech | 8.6 | 6.022702 |
| A1_12 | 22 | Fagus sylvatica | European Beech | 12.2 | 14.95488 |
| A1_12 | 23 | Fagus sylvatica | European Beech | 15 | 25.59613 |
| A1_12 | 24 | Fagus sylvatica | European Beech | 8.1 | 5.153834 |

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| A1_12 | 25 | Fagus sylvatica | European Beech | 12.5 | 15.9303 |
| A1_12 | 26 | Fagus sylvatica | European Beech | 11.2 | 11.97228 |
| A1_12 | 27 | Fagus sylvatica | European Beech | 11.2 | 11.97228 |
| A1_12 | 28 | Fagus sylvatica | European Beech | 9.9 | 8.685765 |
| A1_12 | 29 | Fagus sylvatica | European Beech | 9.2 | 7.177498 |
| A1_12 | 30 | Fagus sylvatica | European Beech | 7.4 | 4.074109 |
| A1_12 | 31 | Fagus sylvatica | European Beech | 6.7 | 3.146165 |
| A1_12 | 32 | Fagus sylvatica | European Beech | 12.2 | 14.95488 |
| A1_12 | 33 | Fagus sylvatica | European Beech | 5.2 | 1.627367 |
| A1_12 | 34 | Fagus sylvatica | European Beech | 13 | 17.64118 |
| A1_12 | 35 | Fagus sylvatica | European Beech | 6.3 | 2.680684 |
| A1_12 | 36 | Fagus sylvatica | European Beech | 18.1 | 41.72371 |
| A1_12 | 37 | Fagus sylvatica | European Beech | 11.5 | 12.82437 |
| A1_12 | 38 | Fagus sylvatica | European Beech | 6.9 | 3.396311 |
| A1_12 | 39 | Fagus sylvatica | European Beech | 14.7 | 24.28585 |
| A1_12 | 40 | Fagus sylvatica | European Beech | 11.6 | 13.11645 |
| A1_12 | 41 | Fagus sylvatica | European Beech | 14.7 | 24.28585 |
| A1_12 | 42 | Fagus sylvatica | European Beech | 9.5 | 7.802253 |
| A1_12 | 43 | Fagus sylvatica | European Beech | 10.7 | 10.63134 |
| A1_12 | 44 | Fagus sylvatica | European Beech | 12.9 | 17.29039 |
| A1_12 | 45 | Fagus sylvatica | European Beech | 5.6 | 1.973322 |
| A1_12 | 46 | Fagus sylvatica | European Beech | 14.1 | 21.79113 |
| A1_12 | 47 | Fagus sylvatica | European Beech | 11.5 | 12.82437 |
| A1_12 | 48 | Fagus sylvatica | European Beech | 8.8 | 6.393819 |
| A1_12 | 49 | Fagus sylvatica | European Beech | 15.3 | 26.94904 |
| A1_12 | 50 | Fagus sylvatica | European Beech | 6.6 | 3.025483 |
| A1_12 | 51 | Fagus sylvatica | European Beech | 11.5 | 12.82437 |
| A1_12 | 52 | Fagus sylvatica | European Beech | 7 | 3.525826 |
| A1_12 | 53 | Fagus sylvatica | European Beech | 6.4 | 2.792769 |
| A1_12 | 54 | Fagus sylvatica | European Beech | 12.2 | 14.95488 |
| A1_12 | 55 | Fagus sylvatica | European Beech | 9 | 6.778689 |
| A1_12 | 56 | Fagus sylvatica | European Beech | 9.5 | 7.802253 |
| A1_12 | 57 | Fagus sylvatica | European Beech | 10.4 | 9.873352 |
| A1_12 | 58 | Fagus sylvatica | European Beech | 16.3 | 31.77319 |
| A1_12 | 59 | Fagus sylvatica | European Beech | 11.2 | 11.97228 |
| A1_12 | 60 | Fagus sylvatica | European Beech | 6.5 | 2.907693 |
| A1_12 | 61 | Fagus sylvatica | European Beech | 17.8 | 39.94876 |
| A1_12 | 62 | Fagus sylvatica | European Beech | 16.1 | 30.76912 |
| A1_12 | 63 | Fagus sylvatica | European Beech | 9.1 | 6.976339 |
| A1_12 | 64 | Fagus sylvatica | European Beech | 6.7 | 3.146165 |
| A1_12 | 65 | Fagus sylvatica | European Beech | 5.4 | 1.795218 |

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| A1_12 | 66 | Fagus sylvatica | European Beech | 7.9 | 4.829353 |
| A1_12 | 67 | Quercus robur | English Oak | 6.2 | 6.156828 |
| A1_12 | 68 | Populus tremula | Aspen | 7.5 | 1.323378 |
| A1_12 | 69 | Populus tremula | Aspen | 10.2 | 2.62529 |
| A1_12 | 70 | Populus tremula | Aspen | 8.8 | 1.664497 |
| A1_12 | 71 | Populus tremula | Aspen | 16.8 | 7.552235 |
| A1_13 | 1 | Betula pendula | European White Birch | 22.7 | 21.74091 |
| A1_13 | 2 | Betula pendula | European White Birch | 17.4 | 11.18259 |
| A1_13 | 3 | Betula pendula | European White Birch | 19.4 | 14.67883 |
| A1_13 | 4 | Betula pendula | European White Birch | 13.4 | 5.819533 |
| A1_13 | 5 | Betula pendula | European White Birch | 19.9 | 15.64315 |
| A1_13 | 6 | Betula pendula | European White Birch | 21.9 | 19.87547 |
| A1_13 | 7 | Betula pendula | European White Birch | 13.7 | 6.150794 |
| A1_13 | 8 | Betula pendula | European White Birch | 14.2 | 6.727544 |
| A1_13 | 9 | Betula pendula | European White Birch | 11 | 3.552837 |
| A1_13 | 10 | Betula pendula | European White Birch | 18.6 | 13.21182 |
| A1_13 | 11 | Betula pendula | European White Birch | 18.6 | 13.21182 |
| A1_13 | 12 | Betula pendula | European White Birch | 6.6 | 0.990533 |
| A1_13 | 13 | Betula pendula | European White Birch | 19.9 | 15.64315 |
| A1_13 | 14 | Betula pendula | European White Birch | 20.8 | 17.47258 |
| A1_13 | 15 | Betula pendula | European White Birch | 17.9 | 12.00346 |
| A1_13 | 16 | Betula pendula | European White Birch | 6.4 | 0.917179 |
| A1_13 | 17 | Betula pendula | European White Birch | 11.7 | 4.145419 |
| A1_13 | 18 | Betula pendula | European White Birch | 7.4 | 1.318583 |
| A1_13 | 19 | Betula pendula | European White Birch | 12.5 | 4.89091 |
| A1_13 | 20 | Betula pendula | European White Birch | 10.8 | 3.393516 |
| A1_13 | 21 | Betula pendula | European White Birch | 12.9 | 5.291687 |
| A1_13 | 22 | Betula pendula | European White Birch | 15.3 | 8.107307 |
| A1_13 | 23 | Betula pendula | European White Birch | 9.4 | 2.39821 |
| A1_13 | 24 | Betula pendula | European White Birch | 12.4 | 4.793664 |
| A1_13 | 25 | Betula pendula | European White Birch | 16.4 | 9.644264 |
| A1_13 | 26 | Betula pendula | European White Birch | 18.8 | 13.5699 |
| A1_13 | 27 | European mountainash | Sorbus aucuparia | 5.8 | 5.693816 |
| A1_13 | 28 | European mountainash | Sorbus aucuparia | 5.1 | 4.323821 |
| A1_13 | 29 | European mountainash | Sorbus aucuparia | 6 | 6.122252 |
| A1_14 | 1 | Betula pendula | European White Birch | 5.2 | 0.545731 |
| A1_14 | 2 | Quercus robur | English Oak | 9.6 | 15.69276 |
| A1_14 | 3 | Quercus robur | English Oak | 10.8 | 20.19136 |
| A1_14 | 4 | Quercus robur | English Oak | 7.4 | 8.990724 |
| A1_14 | 5 | Quercus robur | English Oak | 10.3 | 18.2436 |
| A1_14 | 6 | Quercus robur | English Oak | 11.4 | 22.6681 |

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| A1_14 | 7 | Quercus robur | English Oak | 10.4 | 18.62474 |
| A1_14 | 8 | Quercus robur | English Oak | 5.6 | 4.951778 |
| A1_14 | 9 | Quercus robur | English Oak | 8.3 | 11.49386 |
| A1_14 | 10 | Quercus robur | English Oak | 9.3 | 14.66197 |
| A1_14 | 11 | Quercus robur | English Oak | 6.9 | 7.740622 |
| A1_14 | 12 | Quercus robur | English Oak | 8.2 | 11.19955 |
| A1_14 | 13 | Quercus robur | English Oak | 9.1 | 13.99547 |
| A1_14 | 14 | Quercus robur | English Oak | 9.5 | 15.34501 |
| A1_14 | 15 | Quercus robur | English Oak | 5.6 | 4.951778 |
| A1_14 | 16 | Quercus robur | English Oak | 5.1 | 4.053582 |
| A1_14 | 17 | Quercus robur | English Oak | 6.5 | 6.81198 |
| A1_14 | 18 | Quercus robur | English Oak | 5.9 | 5.536841 |
| A1_14 | 19 | Quercus robur | English Oak | 6 | 5.739611 |
| A1_14 | 20 | Quercus robur | English Oak | 7.8 | 10.06286 |
| A1_14 | 21 | Quercus robur | English Oak | 7 | 7.982677 |
| A1_14 | 23 | Quercus robur | English Oak | 6.9 | 7.740622 |
| A1_14 | 24 | Quercus robur | English Oak | 5.4 | 4.581012 |
| A1_14 | 25 | Quercus robur | English Oak | 6.1 | 5.94627 |
| A1_14 | 26 | Quercus robur | English Oak | 10.6 | 19.39962 |
| A1_14 | 27 | Quercus robur | English Oak | 6.4 | 6.589674 |
| A1_14 | 28 | Quercus robur | English Oak | 6.1 | 5.94627 |
| A1_14 | 29 | Quercus robur | English Oak | 6.7 | 7.268401 |
| A1_14 | 30 | Quercus robur | English Oak | 10.6 | 19.39962 |
| A1_14 | 31 | Quercus robur | English Oak | 8.7 | 12.71189 |
| A1_14 | 32 | Quercus robur | English Oak | 13 | 30.02462 |
| A1_14 | 33 | Quercus robur | English Oak | 5.8 | 5.337952 |
| A1_14 | 34 | Quercus robur | English Oak | 8.1 | 10.9093 |
| A1_14 | 35 | Quercus robur | English Oak | 9.2 | 14.32665 |
| A1_14 | 36 | Quercus robur | English Oak | 9.4 | 15.00142 |
| A1_14 | 37 | Quercus robur | English Oak | 6.4 | 6.589674 |
| A1_14 | 38 | Quercus robur | English Oak | 9.6 | 15.69276 |
| A1_14 | 39 | Quercus robur | English Oak | 8.6 | 12.40125 |
| A1_14 | 40 | Quercus robur | English Oak | 6 | 5.739611 |
| A1_14 | 41 | Quercus robur | English Oak | 7.1 | 8.228708 |
| A1_14 | 42 | Quercus robur | English Oak | 11.8 | 24.4043 |
| A1_14 | 43 | Quercus robur | English Oak | 5.3 | 4.401383 |
| A1_14 | 44 | Quercus robur | English Oak | 6.1 | 5.94627 |
| A1_14 | 45 | Quercus robur | English Oak | 5.9 | 5.536841 |
| A1_14 | 46 | Quercus robur | English Oak | 12.3 | 26.67078 |
| A1_14 | 47 | Quercus robur | English Oak | 12.8 | 29.04478 |
| A1_14 | 48 | Quercus robur | English Oak | 5.4 | 4.581012 |

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| A1_14 | 49 | Quercus robur | English Oak | 10 | 17.12532 |
| A1_14 | 50 | Quercus robur | English Oak | 5.9 | 5.536841 |
| A1_15 | 1 | Betula pendula | European White Birch | 6 | 0.780498 |
| A1_15 | 1 | Betula pendula | European White Birch | 19.1 | 14.11783 |
| A1_15 | 2 | Betula pendula | European White Birch | 6.1 | 0.813431 |
| A1_15 | 3 | Betula pendula | European White Birch | 12.6 | 4.989331 |
| A1_15 | 4 | Quercus robur | English Oak | 8.4 | 11.79224 |
| A1_15 | 5 | Quercus robur | English Oak | 12 | 25.29803 |
| A1_15 | 6 | Quercus robur | English Oak | 13.1 | 30.52104 |
| A1_15 | 7 | Quercus robur | English Oak | 5.4 | 4.581012 |
| A1_15 | 8 | Quercus robur | English Oak | 12.7 | 28.56135 |
| A1_15 | 9 | Quercus robur | English Oak | 8.2 | 11.19955 |
| A1_15 | 10 | Quercus robur | English Oak | 9.5 | 15.34501 |
| A1_15 | 11 | Quercus robur | English Oak | 6.7 | 7.268401 |
| A1_15 | 12 | Quercus robur | English Oak | 7.9 | 10.34096 |
| A1_15 | 13 | Quercus robur | English Oak | 7.2 | 8.478721 |
| A1_15 | 14 | Quercus robur | English Oak | 13 | 30.02462 |
| A1_15 | 15 | Quercus robur | English Oak | 7.1 | 8.228708 |
| A1_15 | 16 | Quercus robur | English Oak | 5.8 | 5.337952 |
| A1_15 | 17 | Quercus robur | English Oak | 8.5 | 12.0947 |
| A1_15 | 18 | Quercus robur | English Oak | 13.1 | 30.52104 |
| A1_15 | 19 | Quercus robur | English Oak | 10 | 17.12532 |
| A1_15 | 20 | Quercus robur | English Oak | 8.1 | 10.9093 |
| A1_15 | 21 | Quercus robur | English Oak | 9.5 | 15.34501 |
| A1_15 | 22 | Quercus robur | English Oak | 8.6 | 12.40125 |
| A1_15 | 23 | Quercus robur | English Oak | 9.2 | 14.32665 |
| A1_15 | 24 | Quercus robur | English Oak | 6.8 | 7.502532 |
| A1_15 | 25 | Quercus robur | English Oak | 7.8 | 10.06286 |
| A1_15 | 26 | Quercus robur | English Oak | 7.8 | 10.06286 |
| A1_15 | 27 | Quercus robur | English Oak | 12.4 | 27.13696 |
| A1_15 | 28 | Quercus robur | English Oak | 9 | 13.6684 |
| A1_15 | 29 | Quercus robur | English Oak | 5.8 | 5.337952 |
| A1_15 | 30 | Quercus robur | English Oak | 19.1 | 68.39907 |
| A1_15 | 31 | Quercus robur | English Oak | 12.5 | 27.60744 |
| A1_15 | 32 | Quercus robur | English Oak | 7.9 | 10.34096 |
| A1_15 | 33 | Quercus robur | English Oak | 11.5 | 23.09575 |
| A1_15 | 34 | Quercus robur | English Oak | 15.4 | 43.14526 |
| A1_15 | 35 | Quercus robur | English Oak | 7.6 | 9.518749 |
| A1_15 | 36 | Quercus robur | English Oak | 5.4 | 4.581012 |
| A1_15 | 37 | Quercus robur | English Oak | 16.1 | 47.45109 |
| A1_15 | 38 | Quercus robur | English Oak | 12.1 | 25.75132 |

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| A1_15 | 39 | Quercus robur | English Oak | 8 | 10.6231 |
| A1_15 | 40 | Quercus robur | English Oak | 14.1 | 35.72463 |
| A1_15 | 41 | Quercus robur | English Oak | 14.8 | 39.6277 |
| A1_15 | 42 | Quercus robur | English Oak | 9.3 | 14.66197 |
| A1_15 | 43 | Quercus robur | English Oak | 12.7 | 28.56135 |
| A1_15 | 44 | European mountainash | Sorbus aucuparia | 5.2 | 4.506344 |
| A1_15 | 45 | European mountainash | Sorbus aucuparia | 7 | 8.513085 |
| A1_15 | 46 | European mountainash | Sorbus aucuparia | 6.3 | 6.794632 |
| A1_15 | 52 | European mountainash | Sorbus aucuparia | 7.9 | 11.02806 |
| A1_15 | 53 | European mountainash | Sorbus aucuparia | 6.4 | 7.027524 |
| A1_15 | 54 | European mountainash | Sorbus aucuparia | 6.1 | 6.341369 |
| A1_15 | 55 | European mountainash | Sorbus aucuparia | 7.1 | 8.775463 |
| A1_15 | 56 | European mountainash | Sorbus aucuparia | 6.7 | 7.751348 |
| A1_16 | 1 | Quercus robur | English Oak | 28.7 | 163.4956 |
| A1_16 | 2 | Quercus robur | English Oak | 21.6 | 88.99586 |
| A1_16 | 3 | Quercus robur | English Oak | 28.2 | 157.4606 |
| A1_16 | 4 | Quercus robur | English Oak | 20 | 75.48193 |
| A1_16 | 5 | Quercus robur | English Oak | 31.4 | 198.1838 |
| A1_17 | 1 | Quercus robur | English Oak | 30.3 | 183.6225 |
| A1_17 | 2 | Quercus robur | English Oak | 22.4 | 96.19877 |
| A1_17 | 3 | Quercus robur | English Oak | 20.4 | 78.74942 |
| A1_17 | 4 | Quercus robur | English Oak | 22 | 92.55999 |
| A1_17 | 5 | Quercus robur | English Oak | 22.9 | 100.8525 |
| A1_17 | 6 | Quercus robur | English Oak | 24.9 | 120.6439 |
| A1_17 | 7 | Quercus robur | English Oak | 30.3 | 183.6225 |
| A1_17 | 8 | Quercus robur | English Oak | 25.6 | 128.0184 |
| A1_17 | 9 | Quercus robur | English Oak | 8.4 | 11.79224 |
| A1_17 | 10 | Quercus robur | English Oak | 26.6 | 138.9586 |
| A1_17 | 11 | Quercus robur | English Oak | 23.3 | 104.6599 |
| A1_17 | 12 | Quercus robur | English Oak | 26.5 | 137.8431 |
| A1_20 | 1 | Fagus sylvatica | European Beech | 20.8 | 59.90232 |
| A1_20 | 2 | Fagus sylvatica | European Beech | 15.6 | 28.3451 |
| A1_20 | 3 | Fagus sylvatica | European Beech | 17.4 | 37.6556 |
| A1_20 | 4 | Fagus sylvatica | European Beech | 16.9 | 34.90553 |
| A1_20 | 5 | Fagus sylvatica | European Beech | 14.3 | 22.60424 |
| A1_20 | 6 | Fagus sylvatica | European Beech | 11.4 | 12.53633 |
| A1_20 | 7 | Fagus sylvatica | European Beech | 16.1 | 30.76912 |
| A1_20 | 8 | Fagus sylvatica | European Beech | 13.3 | 18.71971 |
| A1_20 | 9 | Betula pendula | European White Birch | 20.3 | 16.44125 |
| A1_20 | 10 | Betula pendula | European White Birch | 10.1 | 2.870007 |
| A1_20 | 11 | Populus tremula | Aspen | 10.8 | 2.715489 |

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| A1_20 | 12 | Populus tremula | Aspen | 18 | 12.29732 |
| A1_20 | 13 | Populus tremula | Aspen | 19.4 | 16.35896 |
| A1_20 | 14 | Populus tremula | Aspen | 20.6 | 19.2023 |
| A1_20 | 15 | Populus tremula | Aspen | 14.4 | 8.701176 |
| A1_20 | 16 | Populus tremula | Aspen | 16.7 | 11.65286 |
| A1_20 | 17 | Populus tremula | Aspen | 18.9 | 13.53875 |
| A1_20 | 18 | Populus tremula | Aspen | 19.4 | 11.43977 |
| A1_20 | 19 | Populus tremula | Aspen | 16.2 | 9.498556 |
| A1_20 | 20 | Populus tremula | Aspen | 15.7 | 6.608505 |
| A1_20 | 21 | Populus tremula | Aspen | 15.9 | 7.25223 |
| A1_20 | 22 | Populus tremula | Aspen | 20.1 | 12.26769 |
| A1_20 | 23 | Populus tremula | Aspen | 14.9 | 5.541271 |
| A1_20 | 24 | Populus tremula | Aspen | 14.5 | 5.649818 |
| A1_20 | 25 | Populus tremula | Aspen | 19.2 | 11.20846 |
| A1_20 | 26 | Populus tremula | Aspen | 17 | 9.360809 |
| A1_20 | 27 | Populus tremula | Aspen | 16.4 | 7.201882 |
| A1_20 | 28 | Populus tremula | Aspen | 13.4 | 4.154436 |
| A1_20 | 29 | Populus tremula | Aspen | 11.9 | 3.287617 |
| A1_20 | 30 | Populus tremula | Aspen | 12.8 | 3.79573 |
| A1_20 | 31 | Populus tremula | Aspen | 20.4 | 16.5137 |
| A1_20 | 32 | Populus tremula | Aspen | 14.9 | 6.799664 |
| A1_20 | 33 | Populus tremula | Aspen | 14.1 | 6.098786 |
| A1_20 | 34 | Populus tremula | Aspen | 16.5 | 8.825856 |
| A1_20 | 35 | Populus tremula | Aspen | 17 | 9.360809 |
| A1_20 | 36 | Populus tremula | Aspen | 13.3 | 4.765211 |
| A1_20 | 37 | Populus tremula | Aspen | 14.6 | 6.129851 |
| A1_20 | 38 | Populus tremula | Aspen | 18.7 | 11.95013 |
| A1_20 | 39 | Populus tremula | Aspen | 19.1 | 11.77675 |
| A1_20 | 40 | Populus tremula | Aspen | 17.7 | 7.780894 |
| A1_20 | 41 | Populus tremula | Aspen | 18.8 | 9.426832 |
| A1_20 | 42 | Populus tremula | Aspen | 11.2 | 2.677548 |
| A1_20 | 43 | Populus tremula | Aspen | 11.9 | 3.287617 |
| A1_20 | 44 | Populus tremula | Aspen | 15.6 | 6.066131 |
| A1_20 | 45 | Populus tremula | Aspen | 17.9 | 9.160127 |
| A1_20 | 46 | Populus tremula | Aspen | 17.4 | 9.231523 |
| A1_20 | 47 | Populus tremula | Aspen | 16.8 | 8.614545 |
| A1_20 | 48 | Populus tremula | Aspen | 19.1 | 15.18402 |
| A1_20 | 49 | Populus tremula | Aspen | 14.4 | 5.96543 |
| A1_20 | 50 | Populus tremula | Aspen | 14.3 | 5.497234 |
| A1_20 | 51 | Populus tremula | Aspen | 16.9 | 9.788787 |
| A1_20 | 52 | Populus tremula | Aspen | 17.8 | 11.4364 |

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| A1_20 | 53 | Populus tremula | Aspen | 10.3 | 3.284032 |
| A1_20 | 54 | Populus tremula | Aspen | 18.4 | 9.671336 |
| A1_20 | 55 | Populus tremula | Aspen | 19.2 | 11.20846 |
| A1_20 | 56 | Populus tremula | Aspen | 16.2 | 8.018602 |
| A35_01 | 1 | Fagus sylvatica | European Beech | 26.5 | 112.4666 |
| A35_01 | 2 | Fagus sylvatica | European Beech | 14 | 21.39144 |
| A35_01 | 3 | Fagus sylvatica | European Beech | 12.2 | 14.95488 |
| A35_01 | 4 | Fagus sylvatica | European Beech | 18.9 | 46.69153 |
| A35_01 | 5 | Fagus sylvatica | European Beech | 22.1 | 70.13345 |
| A35_01 | 6 | Fagus sylvatica | European Beech | 9.8 | 8.459407 |
| A35_01 | 7 | Fagus sylvatica | European Beech | 14.1 | 21.79113 |
| A35_01 | 8 | Fagus sylvatica | European Beech | 16 | 30.2745 |
| A35_01 | 9 | Fagus sylvatica | European Beech | 21.2 | 62.94489 |
| A35_01 | 10 | Fagus sylvatica | European Beech | 14.2 | 22.1954 |
| A35_01 | 11 | Fagus sylvatica | European Beech | 17.4 | 37.6556 |
| A35_01 | 12 | Fagus sylvatica | European Beech | 20.5 | 57.68099 |
| A35_01 | 13 | Fagus sylvatica | European Beech | 17.9 | 40.53514 |
| A35_01 | 14 | Fagus sylvatica | European Beech | 25.6 | 102.8 |
| A35_01 | 15 | Quercus robur | English Oak | 5.2 | 4.225576 |
| A35_01 | 16 | Quercus robur | English Oak | 6.3 | 6.371293 |
| A35_01 | 17 | Quercus robur | English Oak | 6 | 5.739611 |
| A35_01 | 18 | Quercus robur | English Oak | 8.8 | 13.02662 |
| A35_01 | 19 | Quercus robur | English Oak | 13.1 | 30.52104 |
| A35_01 | 20 | Quercus robur | English Oak | 5.6 | 4.951778 |
| A35_01 | 21 | Quercus robur | English Oak | 6.4 | 6.589674 |
| A35_01 | 22 | Quercus robur | English Oak | 12 | 25.29803 |
| A35_01 | 23 | Quercus robur | English Oak | 13 | 30.02462 |
| A35_01 | 24 | Quercus robur | English Oak | 13.2 | 31.0218 |
| A35_01 | 25 | Quercus robur | English Oak | 12.9 | 29.53254 |
| A35_02 | 1 | Fagus sylvatica | European Beech | 27.6 | 125.016 |
| A35_02 | 2 | Fagus sylvatica | European Beech | 13.4 | 19.088 |
| A35_02 | 3 | Fagus sylvatica | European Beech | 62.9 | 1065.249 |
| A35_02 | 4 | Fagus sylvatica | European Beech | 14 | 21.39144 |
| A35_02 | 5 | Fagus sylvatica | European Beech | 11.7 | 13.41258 |
| A35_02 | 6 | Fagus sylvatica | European Beech | 15.8 | 29.30003 |
| A35_02 | 7 | Fagus sylvatica | European Beech | 22.7 | 75.19417 |
| A35_02 | 8 | Sorbus aucuparia | European mountainash | 5.8 | 5.693816 |
| A35_02 | 9 | Sorbus aucuparia | European mountainash | 5.1 | 4.323821 |
| A35_02 | 10 | Quercus robur | English Oak | 46 | 448.684 |
| A35_02 | 11 | Quercus robur | English Oak | 26.9 | 142.334 |

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| A35_02 | 12 | Quercus robur | English Oak | 40.1 | 334.4781 |
| A35_02 | 13 | Quercus robur | English Oak | 22.8 | 99.91239 |
| A35_02 | 14 | Quercus robur | English Oak | 38.4 | 304.865 |
| A35_02 | 15 | Quercus robur | English Oak | 30.2 | 182.3281 |
| A35_02 | 16 | Quercus robur | English Oak | 30.3 | 183.6225 |
| A35_03_1 | 1 | Fagus sylvatica | European Beech | 33.8 | 211.7743 |
| A35_04 | 1 | Fagus sylvatica | European Beech | 14.3 | 22.60424 |
| A35_04 | 2 | Fagus sylvatica | European Beech | 13.6 | 19.8379 |
| A35_04 | 3 | Fagus sylvatica | European Beech | 21.8 | 67.68404 |
| A35_04 | 4 | Betula pendula | European White Birch | 14.6 | 7.211447 |
| A35_04 | 5 | Quercus robur | English Oak | 16.9 | 52.64005 |
| A35_04 | 6 | Quercus robur | English Oak | 12.3 | 26.67078 |
| A35_04 | 7 | Quercus robur | English Oak | 19.6 | 72.28809 |
| A35_04 | 8 | Quercus robur | English Oak | 12.3 | 26.67078 |
| A35_04 | 9 | Quercus robur | English Oak | 11.2 | 21.82556 |
| A35_04 | 10 | Quercus robur | English Oak | 14.4 | 37.37098 |
| A35_04 | 11 | Quercus robur | English Oak | 13.6 | 33.06831 |
| A35_04 | 12 | Quercus robur | English Oak | 12.2 | 26.2089 |
| A35_04 | 13 | Quercus robur | English Oak | 16 | 46.8226 |
| A35_04 | 14 | Quercus robur | English Oak | 14.2 | 36.26902 |
| A35_04 | 15 | Quercus robur | English Oak | 12 | 25.29803 |
| A35_04 | 16 | Quercus robur | English Oak | 24.5 | 116.5344 |
| A35_04 | 17 | Quercus robur | English Oak | 13.8 | 34.11772 |
| A35_04 | 18 | Quercus robur | English Oak | 13.5 | 32.55015 |
| A35_04 | 19 | Quercus robur | English Oak | 14.5 | 37.92856 |
| A35_04 | 20 | Quercus robur | English Oak | 16.1 | 47.45109 |
| A35_04 | 21 | Quercus robur | English Oak | 17.9 | 59.53115 |
| A35_04 | 22 | Quercus robur | English Oak | 12.2 | 26.2089 |
| A35_04 | 23 | Quercus robur | English Oak | 8.8 | 13.02662 |
| A35_04 | 24 | Quercus robur | English Oak | 9.1 | 13.99547 |
| A35_04 | 25 | Quercus robur | English Oak | 8.1 | 10.9093 |
| A35_04 | 26 | Quercus robur | English Oak | 12 | 25.29803 |
| A35_04 | 27 | Quercus robur | English Oak | 8 | 10.6231 |
| A35_04 | 28 | Quercus robur | English Oak | 11.5 | 23.09575 |
| A35_04 | 29 | Quercus robur | English Oak | 11.6 | 23.52767 |
| A35_04 | 30 | Quercus robur | English Oak | 18.1 | 60.96365 |
| A35_04 | 31 | Quercus robur | English Oak | 12.6 | 28.08224 |
| A35_04 | 32 | Quercus robur | English Oak | 13.8 | 34.11772 |
| A35_04 | 33 | Quercus robur | English Oak | 17.3 | 55.34233 |
| A35_04 | 34 | Quercus robur | English Oak | 18 | 60.24513 |
| A35_04 | 35 | Quercus robur | English Oak | 21 | 83.7892 |

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| A35_04 | 36 | Quercus robur | English Oak | 15.9 | 46.19858 |
| A35_04 | 37 | Quercus robur | English Oak | 6.9 | 7.740622 |
| A35_04 | 38 | Quercus robur | English Oak | 8.2 | 11.19955 |
| A35_04 | 39 | Quercus robur | English Oak | 6 | 5.739611 |
| A35_04 | 40 | Quercus robur | English Oak | 10.7 | 19.79338 |
| A35_04 | 41 | Quercus robur | English Oak | 18 | 60.24513 |
| A35_04 | 42 | Quercus robur | English Oak | 14.8 | 39.6277 |
| A35_04 | 43 | Quercus robur | English Oak | 17 | 53.30887 |
| A35_04 | 44 | Quercus robur | English Oak | 16 | 46.8226 |
| A35_04 | 45 | Quercus robur | English Oak | 11.4 | 22.6681 |
| A35_04 | 46 | Quercus robur | English Oak | 19.5 | 71.50112 |
| A35_04 | 47 | Quercus robur | English Oak | 15.5 | 43.74703 |
| A35_04_1 | 1 | Betula pendula | European White Birch | 28.5 | 38.40279 |
| A35_04_1 | 1 | Fagus sylvatica | European Beech | 14.1 | 21.79113 |
| A35_04_1 | 2 | Fagus sylvatica | European Beech | 12.6 | 16.2639 |
| A35_04_1 | 3 | Fagus sylvatica | European Beech | 18.4 | 43.54638 |
| A35_04_1 | 4 | Fagus sylvatica | European Beech | 16.3 | 31.77319 |
| A35_04_1 | 5 | Fagus sylvatica | European Beech | 15.9 | 29.78481 |
| A35_04_1 | 6 | Fagus sylvatica | European Beech | 8.9 | 6.584523 |
| A35_04_1 | 7 | Fagus sylvatica | European Beech | 11.8 | 13.7128 |
| A35_04_1 | 8 | Fagus sylvatica | European Beech | 13.1 | 17.99631 |
| A35_04_1 | 9 | Fagus sylvatica | European Beech | 18.7 | 45.41726 |
| A35_04_1 | 10 | Fagus sylvatica | European Beech | 14.6 | 23.85848 |
| A35_04_1 | 11 | Fagus sylvatica | European Beech | 12.9 | 17.29039 |
| A35_04_1 | 12 | Quercus robur | English Oak | 8.8 | 13.02662 |
| A35_04_1 | 13 | Quercus robur | English Oak | 11.4 | 22.6681 |
| A35_04_1 | 14 | Quercus robur | English Oak | 11.9 | 24.84902 |
| A35_04_1 | 15 | Quercus robur | English Oak | 15.7 | 44.96391 |
| A35_04_1 | 16 | Quercus robur | English Oak | 13.4 | 32.03635 |
| A35_04_1 | 17 | Quercus robur | English Oak | 22.4 | 96.19877 |
| A35_04_1 | 18 | Quercus robur | English Oak | 11.7 | 23.96385 |
| A35_04_1 | 19 | Quercus robur | English Oak | 12.8 | 29.04478 |
| A35_04_1 | 20 | Quercus robur | English Oak | 17.1 | 53.98218 |
| A35_04_1 | 21 | Quercus robur | English Oak | 16.4 | 49.36335 |
| A35_04_1 | 22 | Quercus robur | English Oak | 10.2 | 17.86665 |
| A35_04_1 | 23 | Quercus robur | English Oak | 14.3 | 36.81781 |
| A35_04_1 | 24 | Quercus robur | English Oak | 13.3 | 31.5269 |
| A35_04_1 | 25 | Quercus robur | English Oak | 9.4 | 15.00142 |
| A35_04_1 | 26 | Quercus robur | English Oak | 12.6 | 28.08224 |
| A35_04_1 | 27 | Quercus robur | English Oak | 15.1 | 41.36656 |
| A35_04_1 | 28 | Quercus robur | English Oak | 16.4 | 49.36335 |

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| A35_04_1 | 29 | Quercus robur | English Oak | 12.3 | 26.67078 |
| A35_04_1 | 30 | Quercus robur | English Oak | 13.8 | 34.11772 |
| A35_04_1 | 31 | Quercus robur | English Oak | 9.8 | 16.40071 |
| A35_04_1 | 32 | Quercus robur | English Oak | 10.4 | 18.62474 |
| A35_04_1 | 33 | Quercus robur | English Oak | 8.9 | 13.34546 |
| A35_04_1 | 34 | Quercus robur | English Oak | 14.6 | 38.49053 |
| A35_04_1 | 35 | Quercus robur | English Oak | 11.4 | 22.6681 |
| A35_04_1 | 36 | Quercus robur | English Oak | 11.9 | 24.84902 |
| A35_04_1 | 37 | Quercus robur | English Oak | 13.5 | 32.55015 |
| A35_05 | 1 | Fagus sylvatica | European Beech | 24.2 | 88.81058 |
| A35_05 | 2 | Fagus sylvatica | European Beech | 5 | 1.469542 |
| A35_05 | 3 | Fagus sylvatica | European Beech | 27.4 | 122.6733 |
| A35_05 | 4 | Betula pendula | European White Birch | 19.8 | 15.44733 |
| A35_05 | 5 | Betula pendula | European White Birch | 10.9 | 3.472628 |
| A35_05 | 6 | Betula pendula | European White Birch | 9.7 | 2.594192 |
| A35_05 | 7 | Quercus robur | English Oak | 13.7 | 33.59083 |
| A35_05 | 8 | Quercus robur | English Oak | 8.9 | 13.34546 |
| A35_05 | 9 | Quercus robur | English Oak | 11.8 | 24.4043 |
| A35_05 | 10 | Quercus robur | English Oak | 13.9 | 34.64898 |
| A35_05 | 11 | Quercus robur | English Oak | 23 | 101.7973 |
| A35_05 | 12 | Quercus robur | English Oak | 15.2 | 41.95503 |
| A35_05 | 13 | Quercus robur | English Oak | 15.6 | 44.35325 |
| A35_05 | 14 | Quercus robur | English Oak | 16.5 | 50.00972 |
| A35_05 | 15 | Quercus robur | English Oak | 11.8 | 24.4043 |
| A35_05 | 16 | Quercus robur | English Oak | 11.9 | 24.84902 |
| A35_05 | 17 | Quercus robur | English Oak | 15.8 | 45.57902 |
| A35_05 | 18 | Quercus robur | English Oak | 10.9 | 20.59356 |
| A35_05 | 19 | Quercus robur | English Oak | 13.1 | 30.52104 |
| A35_05 | 20 | Quercus robur | English Oak | 16.3 | 48.72146 |
| A35_05 | 21 | Quercus robur | English Oak | 15.7 | 44.96391 |
| A35_05 | 22 | Quercus robur | English Oak | 13.4 | 32.03635 |
| A35_05 | 23 | Quercus robur | English Oak | 12.9 | 29.53254 |
| A35_05 | 24 | Quercus robur | English Oak | 15.2 | 41.95503 |
| A35_05 | 25 | Quercus robur | English Oak | 11.9 | 24.84902 |
| A35_05 | 26 | Quercus robur | English Oak | 17.8 | 58.8217 |
| A35_05 | 27 | Quercus robur | English Oak | 17.2 | 54.66 |
| A35_05 | 28 | Quercus robur | English Oak | 10.3 | 18.2436 |
| A35_05 | 29 | Quercus robur | English Oak | 17.2 | 54.66 |
| A35_05 | 32 | Corylus avellana | European filbert | 20 | 77.99799 |
| A35_05 | 33 | Corylus avellana | European filbert | 6 | 5.930931 |
| A35_05 | 34 | Corylus avellana | European filbert | 5.3 | 4.548096 |

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| A35_05 | 35 | Corylus avellana | European filbert | 6.8 | 7.752616 |
| A35_05 | 36 | Corylus avellana | European filbert | 13.7 | 34.71053 |
| A35_05 | 37 | Corylus avellana | European filbert | 15.6 | 45.83169 |
| A35_05 | 38 | Corylus avellana | European filbert | 7.3 | 9.023814 |
| A35_05 | 39 | Corylus avellana | European filbert | 14.2 | 37.47799 |
| A35_05 | 40 | Corylus avellana | European filbert | 16.4 | 51.00879 |
| A35_08 | 1 | Quercus robur | English Oak | 30.1 | 181.0386 |
| A35_08 | 2 | Quercus robur | English Oak | 30.7 | 188.8491 |
| A35_08 | 3 | Quercus robur | English Oak | 35.7 | 260.8247 |
| A35_08 | 4 | Quercus robur | English Oak | 30.7 | 188.8491 |
| A35_08 | 5 | Quercus robur | English Oak | 25.4 | 125.8876 |
| A35_08 | 6 | Quercus robur | English Oak | 26.9 | 142.334 |
| A35_08 | 7 | Quercus robur | English Oak | 26.7 | 140.0789 |
| A35_08 | 8 | Quercus robur | English Oak | 26.3 | 135.6264 |
| A35_08 | 9 | Quercus robur | English Oak | 21.2 | 85.50618 |
| A35_08 | 10 | Quercus robur | English Oak | 25.3 | 124.8293 |
| A35_08 | 11 | Quercus robur | English Oak | 26.4 | 136.7323 |
| A35_08 | 12 | Quercus robur | English Oak | 21.4 | 87.24173 |
| A35_08 | 13 | Quercus robur | English Oak | 14.2 | 36.26902 |
| A35_09 | 1 | Fagus sylvatica | European Beech | 19.7 | 52.00769 |
| A35_09 | 2 | Fagus sylvatica | European Beech | 26.1 | 108.1043 |
| A35_09 | 3 | Fagus sylvatica | European Beech | 22.1 | 70.13345 |
| A35_09 | 4 | Betula pendula | European White Birch | 27.5 | 35.12178 |
| A35_09 | 5 | Betula pendula | European White Birch | 28.8 | 39.42154 |
| A35_09 | 6 | Betula pendula | European White Birch | 15.4 | 8.240449 |
| A35_09 | 7 | Betula pendula | European White Birch | 15.9 | 8.925801 |
| A35_09 | 8 | Betula pendula | European White Birch | 17.1 | 10.70673 |
| A35_09 | 9 | Quercus robur | English Oak | 12.1 | 25.75132 |
| A35_09 | 10 | Quercus robur | English Oak | 12.5 | 27.60744 |
| A35_09 | 11 | Quercus robur | English Oak | 14.8 | 39.6277 |
| A35_09 | 12 | Quercus robur | English Oak | 18.3 | 62.4143 |
| A35_09 | 13 | Quercus robur | English Oak | 16.2 | 48.08404 |
| A35_09 | 14 | Quercus robur | English Oak | 18.8 | 66.12057 |
| A35_09 | 15 | Quercus robur | English Oak | 22.2 | 94.37004 |
| A35_09 | 16 | Quercus robur | English Oak | 17.6 | 57.41639 |
| A35_09 | 17 | Quercus robur | English Oak | 16.1 | 47.45109 |
| A35_09 | 18 | Quercus robur | English Oak | 12.2 | 26.2089 |
| A35_09 | 19 | Quercus robur | English Oak | 19.9 | 74.67657 |
| A35_09 | 20 | Quercus robur | English Oak | 16.7 | 51.31591 |
| A35_09 | 21 | Quercus robur | English Oak | 15.1 | 41.36656 |
| A35_09 | 22 | Quercus robur | English Oak | 12.8 | 29.04478 |

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| A35_09 | 23 | Quercus robur | English Oak | 16.6 | 50.66057 |
| A35_09 | 24 | Quercus robur | English Oak | 14 | 35.18461 |
| L560_01_1 | 1 | Fraxinus excelsior | Common Ash | 30.1 | 196.1251 |
| L560_01_1 | 2 | Fraxinus excelsior | Common Ash | 24.1 | 121.8758 |
| L560_01_1 | 3 | Fraxinus excelsior | Common Ash | 35.7 | 282.5601 |
| L560_01_1 | 4 | Fraxinus excelsior | Common Ash | 28.1 | 169.2904 |
| L560_01_1 | 5 | Fraxinus excelsior | Common Ash | 25.6 | 138.6866 |
| L560_01_1 | 6 | Quercus robur | English Oak | 30.1 | 181.0386 |
| L560_01_1 | 7 | Quercus robur | English Oak | 32.5 | 213.3385 |
| L560_01_1 | 8 | Quercus robur | English Oak | 30.1 | 181.0386 |
| L560_01_1 | 9 | Quercus robur | English Oak | 28.6 | 162.2789 |
| L560_01_1 | 10 | Quercus robur | English Oak | 28.3 | 158.6579 |
| L560_01_1 | 11 | Quercus robur | English Oak | 12.5 | 27.60744 |
| L560_01_1 | 12 | Quercus robur | English Oak | 25.8 | 130.1682 |
| L560_01_1 | 13 | Quercus robur | English Oak | 25 | 121.6831 |
| L560_01_1 | 14 | Quercus robur | English Oak | 24.2 | 113.502 |
| L560_01_1 | 15 | Quercus robur | English Oak | 17.4 | 56.02917 |
| L560_01_1 | 16 | Quercus robur | English Oak | 25.7 | 129.0909 |
| L560_01_1 | 17 | Quercus robur | English Oak | 14.9 | 40.2029 |
| L560_01_1 | 18 | Quercus robur | English Oak | 27.1 | 144.6082 |
| L560_01_1 | 19 | Quercus robur | English Oak | 26.4 | 136.7323 |
| L560_01_1 | 20 | Quercus robur | English Oak | 21.6 | 88.99586 |
| L560_01_1 | 21 | Quercus robur | English Oak | 31.1 | 194.1539 |
| L560_01_1 | 22 | Quercus robur | English Oak | 14.8 | 39.6277 |
| L560_01_4 | 1 | Quercus robur | English Oak | 22.7 | 98.97696 |
| L560_01_4 | 2 | Quercus robur | English Oak | 15 | 40.78252 |
| L560_01_4 | 3 | Quercus robur | English Oak | 20.9 | 82.93767 |
| L560_01_4 | 4 | Quercus robur | English Oak | 16.8 | 51.97574 |
| L560_01_4 | 5 | Quercus robur | English Oak | 18.4 | 63.14645 |
| L560_01_4 | 6 | Quercus robur | English Oak | 19 | 67.635 |
| L560_04_1 | 1 | Quercus robur | English Oak | 13.3 | 31.5269 |
| L560_04_1 | 2 | Quercus robur | English Oak | 17.3 | 55.34233 |
| L560_04_1 | 3 | Quercus robur | English Oak | 13.7 | 33.59083 |
| L560_04_1 | 4 | Quercus robur | English Oak | 17.8 | 58.8217 |
| L560_04_1 | 5 | Quercus robur | English Oak | 26.3 | 135.6264 |
| L560_04_1 | 6 | Quercus robur | English Oak | 19.2 | 69.16771 |
| L560_04_2 | 1 | Quercus robur | English Oak | 27.6 | 150.378 |
| L560_04_2 | 2 | Quercus robur | English Oak | 18.4 | 63.14645 |
| L560_04_2 | 3 | Quercus robur | English Oak | 22 | 92.55999 |
| L560_04_2 | 4 | Quercus robur | English Oak | 22 | 92.55999 |
| L560_04_2 | 5 | Quercus robur | English Oak | 17.2 | 54.66 |

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| L560_04_2 | 6 | Quercus robur | English Oak | 25.4 | 125.8876 |
| L560_04_2 | 7 | Quercus robur | English Oak | 25.9 | 131.2503 |
| L560_04_2 | 8 | Quercus robur | English Oak | 17.1 | 53.98218 |
| L560_04_2 | 9 | Quercus robur | English Oak | 21.4 | 87.24173 |
| L560_04_2 | 10 | Quercus robur | English Oak | 26.1 | 133.4288 |
| L560_04_2 | 11 | Quercus robur | English Oak | 26.2 | 134.5252 |
| L560_04_2 | 12 | Quercus robur | English Oak | 22.1 | 93.46268 |
| N18_01 | 1 | Quercus robur | English Oak | 45.4 | 436.2529 |
| N18_01 | 2 | Quercus robur | English Oak | 62.6 | 867.5766 |
| N18_01 | 3 | Quercus robur | English Oak | 61 | 820.8138 |
| N18_01 | 4 | Quercus robur | English Oak | 27.6 | 150.378 |
| N18_01 | 5 | Quercus robur | English Oak | 41.1 | 352.5821 |
| N18_01 | 6 | Quercus robur | English Oak | 66.2 | 977.8559 |
| N18_01 | 7 | Quercus robur | English Oak | 48.4 | 500.2739 |
| N18_01 | 8 | Quercus robur | English Oak | 47.3 | 476.2573 |
| N18_01 | 9 | Quercus robur | English Oak | 59.6 | 781.0265 |
| N18_03 | 1 | Quercus robur | English Oak | 56.7 | 701.9506 |
| N18_03 | 2 | Quercus robur | English Oak | 51.5 | 571.3553 |
| N18_03 | 3 | Quercus robur | English Oak | 33.2 | 223.2926 |
| N18_03 | 4 | Quercus robur | English Oak | 35.7 | 260.8247 |
| N18_03 | 5 | Quercus robur | English Oak | 58.6 | 753.2509 |
| N18_03 | 6 | Quercus robur | English Oak | 47.2 | 474.1051 |
| N18_03 | 7 | Quercus robur | English Oak | 39 | 315.1498 |
| N18_03 | 8 | Quercus robur | English Oak | 56.9 | 707.2599 |
| N18_03 | 9 | Quercus robur | English Oak | 30.6 | 187.5351 |
| N18_03 | 10 | Quercus robur | English Oak | 42.9 | 386.4536 |
| N18_04 | 1 | Quercus robur | English Oak | 56.3 | 691.3958 |
| N18_04 | 2 | Quercus robur | English Oak | 41.5 | 359.9662 |
| N18_04 | 3 | Quercus robur | English Oak | 43.2 | 392.26 |
| N18_04 | 4 | Quercus robur | English Oak | 39.4 | 322.1074 |
| N18_04 | 5 | Quercus robur | English Oak | 49.9 | 534.0402 |
| N18_04 | 6 | Quercus robur | English Oak | 44.3 | 413.9451 |
| N18_04 | 7 | Quercus robur | English Oak | 62.1 | 852.8149 |
| N18_04 | 8 | Quercus robur | English Oak | 45.9 | 446.5992 |
| N18_04 | 9 | Quercus robur | English Oak | 11.2 | 21.82556 |
| N18_04 | 10 | Quercus robur | English Oak | 51.1 | 561.9006 |
| N18_04 | 11 | Quercus robur | English Oak | 37.2 | 284.8398 |
| N18_05 | 1 | Quercus robur | English Oak | 51.4 | 568.9837 |
| N18_05 | 12 | Quercus robur | English Oak | 49.8 | 531.7525 |
| N18_05 | 13 | Quercus robur | English Oak | 58.8 | 758.7632 |
| N18_05 | 14 | Quercus robur | English Oak | 37.9 | 296.4331 |

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| N18_05 | 15 | Quercus robur | English Oak | 56.3 | 691.3958 |
| N18_05 | 16 | Quercus robur | English Oak | 30.2 | 182.3281 |
| N18_05 | 17 | Quercus robur | English Oak | 39.3 | 320.3604 |
| N18_05 | 18 | Quercus robur | English Oak | 57 | 709.9225 |
| N18_05 | 19 | Pinus sylvestris | Scots Pine | 45.4 | 144.7892 |
| N18_08 | 1 | Quercus robur | English Oak | 38 | 298.1094 |
| N18_08 | 2 | Quercus robur | English Oak | 19.7 | 73.07966 |
| N18_08 | 3 | Quercus robur | English Oak | 46.6 | 461.3013 |
| N18_08 | 4 | Quercus robur | English Oak | 58.7 | 756.0044 |
| N18_08 | 5 | Quercus robur | English Oak | 47.7 | 484.9178 |
| N18_08 | 6 | Quercus robur | English Oak | 42.6 | 380.6934 |
| N18_08 | 7 | Quercus robur | English Oak | 41.8 | 365.5578 |
| N18_08 | 8 | Quercus robur | English Oak | 60.7 | 812.1992 |
| N18_08 | 9 | Quercus robur | English Oak | 46.5 | 459.1854 |
| N18_10 | 1 | Quercus robur | English Oak | 50.6 | 550.2004 |
| N18_10 | 2 | Quercus robur | English Oak | 44.5 | 417.9547 |
| N18_10 | 3 | Quercus robur | English Oak | 43.2 | 392.26 |
| N18_10 | 4 | Quercus robur | English Oak | 56.9 | 707.2599 |
| N18_10 | 5 | Quercus robur | English Oak | 41.7 | 363.6888 |
| N18_10 | 6 | Quercus robur | English Oak | 56.1 | 686.1504 |
| N18_10 | 7 | Quercus robur | English Oak | 47.1 | 471.9582 |
| N18_10 | 8 | Quercus robur | English Oak | 39.8 | 329.146 |
| N18_10 | 9 | Quercus robur | English Oak | 59.5 | 778.2248 |
| N18_10 | 10 | Quercus robur | English Oak | 39.6 | 325.6166 |
| N18_11 | 1 | Quercus robur | English Oak | 22.5 | 97.12016 |
| N18_11 | 2 | Quercus robur | English Oak | 39.5 | 323.8594 |
| N18_11 | 3 | Quercus robur | English Oak | 46.1 | 450.7739 |
| N18_11 | 4 | Quercus robur | English Oak | 44.6 | 419.9672 |
| N18_11 | 5 | Quercus robur | English Oak | 57.2 | 715.2639 |
| N18_11 | 6 | Quercus robur | English Oak | 45.1 | 430.1071 |
| N18_11 | 7 | Quercus robur | English Oak | 56.2 | 688.7704 |
| N18_11 | 8 | Quercus robur | English Oak | 60.4 | 803.6331 |
| N18_11 | 9 | Quercus robur | English Oak | 40.2 | 336.2657 |
| N18_13 | 1 | Fagus sylvatica | European Beech | 40.4 | 336.7897 |
| N18_13 | 2 | Fagus sylvatica | European Beech | 33.9 | 213.4078 |
| N18_13 | 3 | Fagus sylvatica | European Beech | 38.2 | 291.1439 |
| N18_13 | 4 | Fagus sylvatica | European Beech | 33.9 | 213.4078 |
| N18_13 | 5 | Fagus sylvatica | European Beech | 36.7 | 262.3357 |
| N18_13 | 6 | Fagus sylvatica | European Beech | 36.5 | 258.6334 |
| N18_13 | 7 | Fagus sylvatica | European Beech | 26.1 | 108.1043 |
| N18_13 | 8 | Quercus robur | English Oak | 57 | 709.9225 |

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| N18_13 | 9 | Quercus robur | English Oak | 51.4 | 568.9837 |
| N18_13 | 10 | Quercus robur | English Oak | 51.6 | 573.7321 |
| N18_13 | 11 | Quercus robur | English Oak | 51 | 559.5501 |
| N18_13 | 12 | Quercus robur | English Oak | 41.7 | 363.6888 |
| N18_13 | 13 | Quercus robur | English Oak | 51 | 559.5501 |
| N18_13 | 14 | Quercus robur | English Oak | 73.2 | 1212.53 |
| N18_13 | 15 | Quercus robur | English Oak | 63.6 | 897.5053 |
| N18_15 | 1 | Quercus robur | English Oak | 45.6 | 440.3759 |
| N18_15 | 2 | Quercus robur | English Oak | 43.2 | 392.26 |
| N18_15 | 3 | Quercus robur | English Oak | 55.3 | 665.3813 |
| N18_15 | 4 | Quercus robur | English Oak | 48.9 | 511.3988 |
| N18_15 | 5 | Quercus robur | English Oak | 43.3 | 394.2057 |
| N18_15 | 6 | Quercus robur | English Oak | 41.7 | 363.6888 |
| N18_15 | 7 | Quercus robur | English Oak | 54.5 | 644.9519 |
| N18_15 | 8 | Quercus robur | English Oak | 50.6 | 550.2004 |
| N315_01 | 1 | Quercus robur | English Oak | 59.9 | 789.4637 |
| N315_01 | 2 | Quercus robur | English Oak | 36.8 | 278.3256 |
| N315_01 | 3 | Quercus robur | English Oak | 53.8 | 627.3543 |
| N315_01 | 4 | Quercus robur | English Oak | 53.5 | 619.8918 |
| N315_01 | 5 | Quercus robur | English Oak | 37.6 | 291.4344 |
| N315_01 | 6 | Quercus robur | English Oak | 52.2 | 588.1034 |
| N315_01 | 7 | Quercus robur | English Oak | 52.1 | 585.695 |
| N315_01 | 8 | Quercus robur | English Oak | 41.8 | 365.5578 |
| N342_01 | 1 | Quercus robur | English Oak | 27.5 | 149.2144 |
| N342_01 | 2 | Quercus robur | English Oak | 28.3 | 158.6579 |
| N342_01 | 3 | Quercus robur | English Oak | 28.3 | 158.6579 |
| N342_01 | 4 | Quercus robur | English Oak | 27.3 | 146.9017 |
| N342_01 | 5 | Quercus robur | English Oak | 24.5 | 116.5344 |
| N342_01 | 6 | Quercus robur | English Oak | 16.6 | 50.66057 |
| N342_02 | 1 | Betula pendula | European White Birch | 19.3 | 14.49037 |
| N342_02 | 2 | Betula pendula | European White Birch | 26.7 | 32.62256 |
| N342_02 | 3 | Quercus robur | English Oak | 29.7 | 175.9291 |
| N342_02 | 4 | Quercus robur | English Oak | 28.2 | 157.4606 |
| N342_02 | 5 | Quercus robur | English Oak | 45 | 428.0688 |
| N342_02 | 6 | Quercus robur | English Oak | 23.5 | 106.5919 |
| N342_02 | 7 | Quercus robur | English Oak | 44.3 | 413.9451 |
| N342_02 | 8 | Quercus robur | English Oak | 21.9 | 91.66197 |
| N342_02 | 9 | Quercus robur | English Oak | 31.9 | 204.9986 |
| N342_02 | 10 | Quercus robur | English Oak | 30.8 | 190.1679 |
| N342_02 | 11 | Quercus robur | English Oak | 31.8 | 203.6258 |
| N342_02 | 12 | Quercus robur | English Oak | 18.4 | 63.14645 |

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| N342_03 | 1 | Quercus robur | English Oak | 18.3 | 62.4143 |
| N342_03 | 2 | Quercus robur | English Oak | 33 | 220.4239 |
| N342_03 | 3 | Quercus robur | English Oak | 23.6 | 107.5649 |
| N342_03 | 4 | Quercus robur | English Oak | 23.7 | 108.5426 |
| N342_03 | 5 | Quercus robur | English Oak | 19.7 | 73.07966 |
| N342_03 | 6 | Quercus robur | English Oak | 31.6 | 200.895 |
| N342_03 | 7 | Quercus robur | English Oak | 17.6 | 57.41639 |
| N342_03 | 8 | Quercus robur | English Oak | 22 | 92.55999 |
| N342_03 | 9 | Quercus robur | English Oak | 25.3 | 124.8293 |
| N342_03 | 10 | Quercus robur | English Oak | 16.5 | 50.00972 |
| N342_03 | 11 | Quercus robur | English Oak | 31.6 | 200.895 |
| N342_03 | 12 | Quercus robur | English Oak | 17.2 | 54.66 |
| N342_03 | 13 | Quercus robur | English Oak | 19.6 | 72.28809 |
| N342_03 | 14 | Quercus robur | English Oak | 15 | 40.78252 |
| N342_03 | 15 | Quercus robur | English Oak | 16.2 | 48.08404 |
| N342_03 | 16 | Quercus robur | English Oak | 23.3 | 104.6599 |
| N342_03 | 17 | Quercus robur | English Oak | 23.5 | 106.5919 |
| N342_03 | 18 | Quercus robur | English Oak | 27 | 143.4687 |
| N342_05_1 | 1 | Quercus robur | English Oak | 33.3 | 224.7343 |
| N342_05_1 | 2 | Quercus robur | English Oak | 30.5 | 186.2261 |
| N342_05_1 | 3 | Quercus robur | English Oak | 21.1 | 84.64537 |
| N342_06 | 1 | Quercus robur | English Oak | 56.7 | 701.9506 |
| N342_06 | 2 | Quercus robur | English Oak | 50.7 | 552.5299 |
| N342_06 | 3 | Quercus robur | English Oak | 53.8 | 627.3543 |
| N342_06 | 4 | Quercus robur | English Oak | 58.6 | 753.2509 |
| N342_06 | 5 | Quercus robur | English Oak | 54.8 | 652.5731 |
| N342_06 | 6 | Quercus robur | English Oak | 48.3 | 498.0646 |
| N342_09 | 1 | Quercus robur | English Oak | 36.5 | 273.4926 |
| N342_09 | 2 | Quercus robur | English Oak | 37 | 281.5726 |
| N342_09 | 3 | Quercus robur | English Oak | 34.4 | 240.9205 |
| N342_09 | 4 | Quercus robur | English Oak | 39.8 | 329.146 |
| N342_09 | 5 | Quercus robur | English Oak | 27 | 143.4687 |
| N342_09 | 6 | Quercus robur | English Oak | 31.4 | 198.1838 |
| N342_09 | 7 | Quercus robur | English Oak | 23.9 | 110.5122 |
| N342_09 | 8 | Quercus robur | English Oak | 31.2 | 195.4923 |
| N342_09 | 9 | Quercus robur | English Oak | 27.3 | 146.9017 |
| N342_09 | 10 | Quercus robur | English Oak | 34.3 | 239.4243 |
| N342_09 | 11 | Quercus robur | English Oak | 30.9 | 191.4917 |
| N342_09 | 12 | Quercus robur | English Oak | 31.9 | 204.9986 |
| N342_09 | 13 | Quercus robur | English Oak | 32.2 | 209.1464 |
| N342_09 | 14 | Quercus robur | English Oak | 33.4 | 226.1811 |

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| N342_11_1 | 1 | Betula pendula | European White Birch | 34.3 | 61.02623 |
| N342_11_1 | 2 | Quercus robur | English Oak | 37.2 | 284.8398 |
| N342_11_1 | 3 | Quercus robur | English Oak | 50.5 | 547.8761 |
| N342_11_1 | 4 | Quercus robur | English Oak | 51.2 | 564.2564 |
| N342_11_1 | 5 | Quercus robur | English Oak | 51.9 | 580.894 |
| N342_11_1 | 6 | Pinus sylvestris | Scots Pine | 50.4 | 222.9762 |
| N342_12 | 1 | Fagus sylvatica | European Beech | 31.4 | 174.8537 |
| N342_12 | 2 | Fagus sylvatica | European Beech | 30.8 | 166.2958 |
| N342_12 | 3 | Fagus sylvatica | European Beech | 19.8 | 52.69714 |
| N342_12 | 4 | Fagus sylvatica | European Beech | 25.6 | 102.8 |
| N342_12 | 5 | Fagus sylvatica | European Beech | 28.1 | 130.9924 |
| N342_12 | 6 | Fagus sylvatica | European Beech | 28.8 | 139.6499 |
| N342_12 | 7 | Fagus sylvatica | European Beech | 29.3 | 146.044 |
| N342_12 | 8 | Fagus sylvatica | European Beech | 30.8 | 166.2958 |
| N342_12 | 9 | Fagus sylvatica | European Beech | 27.4 | 122.6733 |
| N342_12 | 10 | Betula pendula | European White Birch | 39.6 | 87.40634 |
| N342_12 | 11 | Betula pendula | European White Birch | 37.1 | 74.25556 |
| N342_12 | 12 | Acer pseudoplatanus | Sycamore maple | 37.7 | 62.08926 |
| N342_12 | 13 | Quercus robur | English Oak | 53.3 | 614.9432 |
| N342_12 | 14 | Quercus robur | English Oak | 49.5 | 524.9209 |
| N342_12 | 15 | Quercus robur | English Oak | 34.3 | 239.4243 |
| N342_12 | 16 | Pinus sylvestris | Scots Pine | 63.8 | 354.2349 |
| N342_12 | 17 | Pinus sylvestris | Scots Pine | 39.6 | 97.25177 |
| N342_12 | 18 | Pinus sylvestris | Scots Pine | 61.1 | 297.6009 |
| N342_12 | 19 | Pinus sylvestris | Scots Pine | 34.6 | 74.61133 |
| N342_12 | 20 | Pinus sylvestris | Scots Pine | 43.7 | 132.4709 |
| N342_12 | 21 | Pinus sylvestris | Scots Pine | 45.6 | 151.8666 |
| N342_12 | 22 | Pinus sylvestris | Scots Pine | 56.7 | 280.9903 |
| N342_12 | 23 | Pinus sylvestris | Scots Pine | 21.4 | 20.10795 |
| N342_12 | 24 | Pinus sylvestris | Scots Pine | 37.3 | 70.52604 |
| N342_12 | 25 | Pinus sylvestris | Scots Pine | 54.3 | 236.0624 |
| N342_15 | 1 | Quercus robur | English Oak | 4.6 | 3.250428 |
| N342_15 | 2 | Quercus robur | English Oak | 7.3 | 8.732723 |
| N342_15 | 3 | Quercus robur | English Oak | 7 | 7.982677 |
| N342_15 | 4 | Quercus robur | English Oak | 6.9 | 7.740622 |
| N342_15 | 5 | Quercus robur | English Oak | 8.8 | 13.02662 |
| N342_15 | 6 | Quercus robur | English Oak | 9.6 | 15.69276 |
| N342_15 | 7 | Quercus robur | English Oak | 6.2 | 6.156828 |
| N342_15 | 8 | Quercus robur | English Oak | 6 | 5.739611 |
| N342_16 | 1 | Quercus robur | English Oak | 16.1 | 47.45109 |
| N342_16 | 2 | Quercus robur | English Oak | 18.3 | 62.4143 |

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| N342_16 | 3 | Quercus robur | English Oak | 19.2 | 69.16771 |
| N342_16 | 4 | Quercus robur | English Oak | 16.1 | 47.45109 |
| N342_16 | 5 | Quercus robur | English Oak | 17.2 | 54.66 |
| N342_16 | 6 | Quercus robur | English Oak | 18.7 | 65.3702 |
| N342_16 | 7 | Quercus robur | English Oak | 5.1 | 4.053582 |
| N342_16 | 8 | Quercus robur | English Oak | 5 | 3.88539 |
| N342_16 | 9 | Quercus robur | English Oak | 17.2 | 54.66 |
| N342_16 | 10 | Quercus robur | English Oak | 18.3 | 62.4143 |
| N342_16 | 11 | Quercus robur | English Oak | 18.3 | 62.4143 |
| N342_16 | 12 | Quercus robur | English Oak | 17.6 | 57.41639 |
| N343_01 | 1 | Quercus robur | English Oak | 20.6 | 80.41085 |
| N343_01 | 2 | Quercus robur | English Oak | 10 | 17.12532 |
| N343_01 | 3 | Quercus robur | English Oak | 19.6 | 72.28809 |
| N343_01 | 4 | Quercus robur | English Oak | 18.1 | 60.96365 |
| N343_01 | 5 | Quercus robur | English Oak | 16.1 | 47.45109 |
| N343_01 | 6 | Quercus robur | English Oak | 16.5 | 50.00972 |
| N343_01 | 7 | Quercus robur | English Oak | 14.1 | 35.72463 |
| N343_01 | 8 | Quercus robur | English Oak | 12 | 25.29803 |
| N343_01 | 9 | Quercus robur | English Oak | 20.8 | 82.09077 |
| N343_01 | 10 | Quercus robur | English Oak | 16.2 | 48.08404 |
| N343_01 | 11 | Quercus robur | English Oak | 21.8 | 90.76861 |
| N343_01 | 12 | Quercus robur | English Oak | 22.1 | 93.46268 |
| N343_01 | 13 | Quercus robur | English Oak | 14.5 | 37.92856 |
| N343_01 | 14 | Quercus robur | English Oak | 12.7 | 28.56135 |
| N343_01 | 15 | Quercus robur | English Oak | 20 | 75.48193 |
| N343_01 | 16 | Quercus robur | English Oak | 17.9 | 59.53115 |
| N343_01 | 17 | Quercus robur | English Oak | 14.4 | 37.37098 |
| N343_01 | 18 | Quercus robur | English Oak | 17.2 | 54.66 |
| N343_01 | 19 | Quercus robur | English Oak | 20.3 | 77.92563 |
| N343_01 | 20 | Quercus robur | English Oak | 12.3 | 26.67078 |
| N343_01 | 21 | Quercus robur | English Oak | 18.1 | 60.96365 |
| N343_01 | 22 | Quercus robur | English Oak | 16.6 | 50.66057 |
| N343_01 | 23 | Quercus robur | English Oak | 16.6 | 50.66057 |
| N343_01 | 24 | Quercus robur | English Oak | 16.7 | 51.31591 |
| N343_01 | 25 | Quercus robur | English Oak | 16.2 | 48.08404 |
| N343_01 | 26 | Quercus robur | English Oak | 13.4 | 32.03635 |
| N343_01 | 27 | Quercus robur | English Oak | 17.7 | 58.11678 |
| N343_01 | 28 | Quercus robur | English Oak | 17.3 | 55.34233 |
| N343_01 | 29 | Quercus robur | English Oak | 16.7 | 51.31591 |
| N343_01 | 30 | Quercus robur | English Oak | 21 | 83.7892 |
| N343_01 | 31 | Quercus robur | English Oak | 23.1 | 102.7468 |

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| N343_01 | 32 | Quercus robur | English Oak | 17.9 | 59.53115 |
| N343_01 | 33 | Quercus robur | English Oak | 19.5 | 71.50112 |
| N343_02 | 1 | Quercus robur | English Oak | 59.5 | 778.2248 |
| N343_02 | 2 | Quercus robur | English Oak | 59.9 | 789.4637 |
| N343_02 | 3 | Quercus robur | English Oak | 50.8 | 554.8647 |
| N343_02 | 4 | Quercus robur | English Oak | 65.5 | 955.8619 |
| N343_02 | 5 | Quercus robur | English Oak | 50.9 | 557.2048 |
| N343_02 | 6 | Quercus robur | English Oak | 54.2 | 637.3783 |
| N343_02 | 7 | Quercus robur | English Oak | 45.8 | 444.5196 |
| N343_02 | 8 | Quercus robur | English Oak | 10 | 17.12532 |
| N343_02 | 9 | Quercus robur | English Oak | 67.3 | 1012.957 |
| N343_02 | 10 | Quercus robur | English Oak | 5.1 | 4.053582 |
| N343_02 | 11 | Quercus robur | English Oak | 9.5 | 15.34501 |
| N343_02 | 12 | Quercus robur | English Oak | 72 | 1170.389 |
| N343_02 | 13 | Quercus robur | English Oak | 7.8 | 10.06286 |
| N343_02 | 14 | Quercus robur | English Oak | 15.3 | 42.54793 |
| N343_02 | 15 | Quercus robur | English Oak | 15.2 | 41.95503 |
| N343_02 | 16 | Quercus robur | English Oak | 47.9 | 489.2792 |
| N343_02 | 17 | Quercus robur | English Oak | 79 | 1427.45 |
| N343_03 | 1 | Quercus robur | English Oak | 83 | 1586.594 |
| N347_02 | 1 | Quercus robur | English Oak | 19.4 | 70.71873 |
| N347_02 | 2 | Quercus robur | English Oak | 17.4 | 56.02917 |
| N347_02 | 3 | Quercus robur | English Oak | 20.6 | 80.41085 |
| N347_02 | 4 | Quercus robur | English Oak | 18.1 | 60.96365 |
| N347_02 | 5 | Quercus robur | English Oak | 18.3 | 62.4143 |
| N347_02 | 6 | Quercus robur | English Oak | 12.3 | 26.67078 |
| N347_02 | 7 | Quercus robur | English Oak | 17.4 | 56.02917 |
| N347_02 | 8 | Quercus robur | English Oak | 18.3 | 62.4143 |
| N347_02 | 9 | Quercus robur | English Oak | 18 | 60.24513 |
| N347_02 | 10 | Quercus robur | English Oak | 19.4 | 70.71873 |
| N347_02 | 11 | Quercus robur | English Oak | 15.6 | 44.35325 |
| N347_02 | 12 | Quercus robur | English Oak | 23.8 | 109.5251 |
| N347_03 | 1 | Quercus robur | English Oak | 16.1 | 47.45109 |
| N347_03 | 2 | Quercus robur | English Oak | 13.7 | 33.59083 |
| N347_03 | 3 | Quercus robur | English Oak | 22.8 | 99.91239 |
| N347_03 | 4 | Quercus robur | English Oak | 13.4 | 32.03635 |
| N347_03 | 5 | Quercus robur | English Oak | 12.9 | 29.53254 |
| N347_03 | 6 | Quercus robur | English Oak | 13.7 | 33.59083 |
| N347_03 | 7 | Quercus robur | English Oak | 14.7 | 39.05691 |
| N347_03 | 8 | Quercus robur | English Oak | 10.6 | 19.39962 |
| N347_03 | 9 | Quercus robur | English Oak | 14.9 | 40.2029 |

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| N347_03 | 10 | Quercus robur | English Oak | 15 | 40.78252 |
| N347_03 | 11 | Quercus robur | English Oak | 12.5 | 27.60744 |
| N347_03 | 12 | Quercus robur | English Oak | 15.9 | 46.19858 |
| N349_02_1 | 1 | Quercus robur | English Oak | 5.1 | 4.053582 |
| N349_02_1 | 2 | Quercus robur | English Oak | 10.7 | 19.79338 |
| N349_02_1 | 3 | Quercus robur | English Oak | 17.4 | 56.02917 |
| N349_02_1 | 4 | Quercus robur | English Oak | 14.7 | 39.05691 |
| N349_02_1 | 5 | Quercus robur | English Oak | 13.5 | 32.55015 |
| N349_02_1 | 6 | Quercus robur | English Oak | 76.3 | 1325.078 |
| N349_02_1 | 7 | Quercus robur | English Oak | 57.3 | 717.9425 |
| N349_02_2 | 1 | Quercus robur | English Oak | 19.9 | 74.67657 |
| N349_02_2 | 2 | Quercus robur | English Oak | 16.1 | 47.45109 |
| N349_02_2 | 3 | Quercus robur | English Oak | 16.5 | 50.00972 |
| N349_03 | 1 | Quercus robur | English Oak | 48.6 | 504.7082 |
| N349_03 | 2 | Quercus robur | English Oak | 37 | 281.5726 |
| N349_03 | 3 | Quercus robur | English Oak | 62.3 | 858.7034 |
| N349_03 | 4 | Quercus robur | English Oak | 47 | 469.8164 |
| N349_03 | 5 | Quercus robur | English Oak | 56 | 683.5356 |
| N349_03 | 6 | Quercus robur | English Oak | 55.9 | 680.9262 |
| N349_03 | 7 | Quercus robur | English Oak | 58.3 | 745.0227 |
| N349_03 | 8 | Quercus robur | English Oak | 62.7 | 870.5452 |
| N349_03 | 9 | Quercus robur | English Oak | 48.2 | 495.8604 |
| N349_03 | 10 | Quercus robur | English Oak | 37.5 | 289.7782 |
| N349_03 | 11 | Quercus robur | English Oak | 56.3 | 691.3958 |
| N349_03 | 12 | Quercus robur | English Oak | 56.9 | 707.2599 |
| N349_03 | 13 | Quercus robur | English Oak | 43.8 | 404.0112 |
| N349_03 | 14 | Quercus robur | English Oak | 60 | 792.2869 |
| N349_03 | 15 | Quercus robur | English Oak | 45 | 428.0688 |
| N349_03 | 16 | Quercus robur | English Oak | 54.8 | 652.5731 |
| N349_03_1 | 1 | Quercus robur | English Oak | 56 | 683.5356 |
| N349_04 | 7 | Pinus nigra | Austrian_pine | 63.6 | 421.203 |
| N349_04 | 8 | Pinus nigra | Austrian_pine | 40.4 | 158.6558 |
| N349_04 | 9 | Pinus nigra | Austrian_pine | 56.2 | 316.8625 |
| N349_07 | 2 | Fagus sylvatica | European Beech | 28.8 | 139.6499 |
| N349_07 | 3 | Fagus sylvatica | European Beech | 81.8 | 2109.756 |
| N349_07 | 4 | Fagus sylvatica | European Beech | 38.5 | 297.1285 |
| N349_07 | 5 | Fraxinus excelsior | Common Ash | 44.2 | 446.277 |
| N349_07 | 6 | Fraxinus excelsior | Common Ash | 25 | 131.8234 |
| N349_07 | 7 | Betula pendula | European White Birch | 39.5 | 86.85549 |
| N349_07 | 8 | Betula pendula | European White Birch | 22.7 | 21.74091 |
| N349_07 | 9 | Betula pendula | European White Birch | 29.9 | 43.29488 |

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| N349_07 | 10 | Betula pendula | European White Birch | 29.8 | 42.93374 |
| N349_07 | 11 | Betula pendula | European White Birch | 37.2 | 74.75702 |
| N349_07 | 12 | Betula pendula | European White Birch | 39.3 | 85.76006 |
| N349_07 | 13 | Betula pendula | European White Birch | 37.6 | 76.78317 |
| N349_07 | 14 | Betula pendula | European White Birch | 32.4 | 52.92177 |
| N349_07 | 15 | Betula pendula | European White Birch | 36.5 | 71.28919 |
| N349_07 | 16 | Betula pendula | European White Birch | 20.1 | 16.03922 |
| N349_07 | 17 | Betula pendula | European White Birch | 29.7 | 42.57441 |
| N349_07 | 18 | Betula pendula | European White Birch | 46.1 | 127.8152 |
| N349_07 | 19 | Betula pendula | European White Birch | 41.7 | 99.46118 |
| N349_07 | 20 | Betula pendula | European White Birch | 28.3 | 37.7325 |
| N349_07 | 21 | Quercus robur | English Oak | 56 | 683.5356 |
| N349_07 | 22 | Quercus robur | English Oak | 24.2 | 113.502 |
| N349_07 | 23 | Quercus robur | English Oak | 63.6 | 897.5053 |
| N349_07 | 24 | Quercus robur | English Oak | 24.1 | 112.5007 |
| N349_07 | 25 | Quercus robur | English Oak | 25 | 121.6831 |
| N349_07 | 26 | Quercus robur | English Oak | 28.8 | 164.7171 |
| N349_07 | 27 | Quercus robur | English Oak | 22.6 | 98.04622 |
| N349_07 | 28 | Quercus robur | English Oak | 31.3 | 196.8356 |
| N349_07 | 29 | Quercus robur | English Oak | 43.7 | 402.0398 |
| N349_07 | 30 | Quercus robur | English Oak | 56.7 | 701.9506 |
| N349_07 | 31 | Quercus robur | English Oak | 27.1 | 144.6082 |
| N349_07 | 32 | Quercus robur | English Oak | 54.9 | 655.1241 |
| N349_07 | 33 | Quercus robur | English Oak | 40.5 | 341.6587 |
| N349_07 | 34 | Quercus robur | English Oak | 41.8 | 365.5578 |
| N349_07 | 35 | Quercus robur | English Oak | 36.1 | 267.1186 |
| N349_07 | 36 | Quercus robur | English Oak | 32.3 | 210.5388 |
| N349_09 | 1 | Fagus sylvatica | European Beech | 49.2 | 562.2923 |
| N349_09 | 2 | Fagus sylvatica | European Beech | 29.6 | 149.9653 |
| N349_09 | 3 | Fagus sylvatica | European Beech | 12.4 | 15.60094 |
| N349_09 | 4 | Fagus sylvatica | European Beech | 14.1 | 21.79113 |
| N349_09 | 5 | Quercus robur | English Oak | 53.5 | 619.8918 |
| N349_09 | 6 | Quercus robur | English Oak | 35.6 | 259.2637 |
| N349_09 | 7 | Quercus robur | English Oak | 48 | 491.4678 |
| N349_09 | 8 | Quercus robur | English Oak | 36.7 | 276.7096 |
| N349_09 | 9 | Quercus robur | English Oak | 37.3 | 286.4809 |
| N349_09 | 10 | Quercus robur | English Oak | 42.1 | 371.1953 |
| N349_09 | 11 | Quercus robur | English Oak | 40.5 | 341.6587 |
| N349_09 | 12 | Quercus robur | English Oak | 41.9 | 367.4318 |
| N349_09 | 13 | Quercus robur | English Oak | 39.9 | 330.9183 |
| N349_09 | 14 | Quercus robur | English Oak | 40.7 | 345.2795 |

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| N349_09 | 15 | Quercus robur | English Oak | 43.8 | 404.0112 |
| N349_09 | 16 | Quercus robur | English Oak | 62.3 | 858.7034 |
| N349_11 | 1 | Quercus robur | English Oak | 21.5 | 88.11647 |
| N349_11 | 2 | Quercus robur | English Oak | 18.3 | 62.4143 |
| N349_11 | 3 | Quercus robur | English Oak | 51.6 | 573.7321 |
| N349_11 | 4 | Quercus robur | English Oak | 54.7 | 650.0274 |
| N349_11 | 5 | Quercus robur | English Oak | 53.5 | 619.8918 |
| N349_11 | 6 | Quercus robur | English Oak | 65.2 | 946.5175 |
| N349_11 | 7 | Quercus robur | English Oak | 69.2 | 1075.142 |
| N349_11 | 8 | Quercus robur | English Oak | 60.5 | 806.4831 |
| N349_11 | 9 | Quercus robur | English Oak | 71 | 1135.878 |
| N349_11 | 10 | Quercus robur | English Oak | 57.5 | 723.3158 |
| N349_11 | 11 | Quercus robur | English Oak | 54.8 | 652.5731 |
| N349_11 | 12 | Quercus robur | English Oak | 61.3 | 829.4767 |
| N349_11 | 13 | Quercus robur | English Oak | 51.2 | 564.2564 |
| N349_11 | 14 | Quercus robur | English Oak | 60.7 | 812.1992 |
| N349_11 | 15 | Quercus robur | English Oak | 67.5 | 1019.41 |
| N349_11 | 16 | Quercus robur | English Oak | 49.8 | 531.7525 |
| N349_11 | 17 | Quercus robur | English Oak | 72.4 | 1184.348 |
| N349_11 | 18 | Quercus robur | English Oak | 77.7 | 1377.653 |
| N349_11 | 19 | Quercus robur | English Oak | 72 | 1170.389 |
| N349_13 | 1 | Fagus sylvatica | European Beech | 81.7 | 2103.054 |
| N349_13 | 2 | Fagus sylvatica | European Beech | 11.4 | 12.53633 |
| N349_13 | 3 | Fagus sylvatica | European Beech | 6.2 | 2.571412 |
| N349_13 | 4 | Fagus sylvatica | European Beech | 5.9 | 2.260201 |
| N349_13 | 5 | Fagus sylvatica | European Beech | 5.3 | 1.710025 |
| N349_13 | 6 | Fagus sylvatica | European Beech | 8.6 | 6.022702 |
| N349_13 | 7 | Quercus robur | English Oak | 48.6 | 504.7082 |
| N349_13 | 8 | Quercus robur | English Oak | 45.2 | 432.1505 |
| N349_13 | 9 | Quercus robur | English Oak | 48.8 | 509.1634 |
| N349_13 | 10 | Quercus robur | English Oak | 33 | 220.4239 |
| N349_13 | 11 | Quercus robur | English Oak | 73.1 | 1208.988 |
| N349_13 | 12 | Quercus robur | English Oak | 38.8 | 311.7013 |
| N349_13 | 13 | Quercus robur | English Oak | 44 | 407.9693 |
| N349_13 | 14 | Quercus robur | English Oak | 37.1 | 283.2037 |
| N349_13 | 15 | Quercus robur | English Oak | 53.7 | 624.8615 |
| N349_13 | 16 | Quercus robur | English Oak | 43.7 | 402.0398 |
| N349_13 | 17 | Quercus robur | English Oak | 67.8 | 1029.13 |
| N349_13 | 18 | Quercus robur | English Oak | 53.1 | 610.0158 |
| N349_13 | 19 | Quercus robur | English Oak | 45 | 428.0688 |
| N349_14 | 1 | Fagus sylvatica | European Beech | 77.6 | 1839.464 |

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| N349_14 | 2 | Fagus sylvatica | European Beech | 32.8 | 195.8614 |
| N349_14 | 3 | Fagus sylvatica | European Beech | 5.5 | 1.882974 |
| N349_14 | 4 | Fagus sylvatica | European Beech | 44.6 | 435.593 |
| N349_14 | 5 | Fagus sylvatica | European Beech | 9.5 | 7.802253 |
| N349_14 | 6 | Fagus sylvatica | European Beech | 65 | 1160.242 |
| N349_14 | 7 | Fagus sylvatica | European Beech | 6.1 | 2.464926 |
| N349_14 | 8 | Fagus sylvatica | European Beech | 15.8 | 29.30003 |
| N349_14 | 9 | Fagus sylvatica | European Beech | 9.2 | 7.177498 |
| N349_14 | 10 | Fagus sylvatica | European Beech | 20.5 | 57.68099 |
| N349_14 | 11 | Fagus sylvatica | European Beech | 21 | 61.41201 |
| N349_14 | 12 | Fagus sylvatica | European Beech | 19.3 | 49.30551 |
| N349_14 | 13 | Fagus sylvatica | European Beech | 15 | 25.59613 |
| N349_14 | 14 | Fagus sylvatica | European Beech | 63.7 | 1100.849 |
| N349_14 | 15 | Fagus sylvatica | European Beech | 48.2 | 533.0479 |
| N349_14 | 16 | Quercus robur | English Oak | 32.6 | 214.7457 |
| N349_14 | 17 | Quercus robur | English Oak | 31.1 | 194.1539 |
| N349_14 | 18 | Quercus robur | English Oak | 38.1 | 299.7907 |
| N349_14 | 19 | Quercus robur | English Oak | 32.8 | 217.5749 |
| N349_14 | 20 | Quercus robur | English Oak | 40 | 332.6957 |
| N349_14 | 21 | Quercus robur | English Oak | 37.2 | 284.8398 |
| N349_14 | 22 | Quercus robur | English Oak | 27.1 | 144.6082 |
| N349_14 | 23 | Quercus robur | English Oak | 26.7 | 140.0789 |
| N349_14 | 24 | Quercus robur | English Oak | 35.3 | 254.6107 |
| N349_14 | 25 | Quercus robur | English Oak | 43.3 | 394.2057 |
| N731_01 | 1 | Betula pendula | European White Birch | 38.5 | 81.46145 |
| N731_01 | 2 | Betula pendula | European White Birch | 33.4 | 57.10091 |
| N731_01 | 3 | Betula pendula | European White Birch | 30.9 | 47.00675 |
| N731_01 | 4 | Quercus rubra | American Oak | 21.2 | 85.50618 |
| N731_01 | 5 | Quercus rubra | American Oak | 23.4 | 105.6235 |
| N731_01 | 6 | Quercus rubra | American Oak | 16.2 | 48.08404 |
| N731_01 | 7 | Quercus rubra | American Oak | 26.3 | 135.6264 |
| N731_01 | 8 | Quercus rubra | American Oak | 22.2 | 94.37004 |
| N731_01 | 9 | Quercus rubra | American Oak | 19 | 67.635 |
| N731_02 | 1 | Fraxinus excelsior | Common Ash | 7.2 | 9.185281 |
| N731_02 | 2 | Quercus rubra | American Oak | 50.4 | 545.557 |
| N731_02 | 3 | Quercus rubra | American Oak | 46.8 | 465.5485 |
| N731_02 | 4 | Quercus rubra | American Oak | 25.5 | 126.9506 |
| N731_02 | 5 | Quercus rubra | American Oak | 36.7 | 276.7096 |
| N731_02 | 6 | Quercus rubra | American Oak | 49.1 | 515.8853 |
| N731_02 | 7 | Quercus rubra | American Oak | 50.5 | 547.8761 |
| N731_02 | 8 | Quercus rubra | American Oak | 36.9 | 279.9466 |

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| N731_02 | 9 | Quercus rubra | American Oak | 37 | 281.5726 |
| N731_02 | 10 | Quercus rubra | American Oak | 59 | 764.2969 |
| N731_02 | 11 | Quercus rubra | American Oak | 54.1 | 634.8643 |
| N731_02 | 12 | Quercus rubra | American Oak | 82 | 1545.968 |
| N731_02 | 13 | Quercus rubra | American Oak | 38.7 | 309.9847 |
| N731_02 | 14 | Quercus rubra | American Oak | 62 | 849.8788 |
| N731_02 | 15 | Quercus rubra | American Oak | 48.3 | 498.0646 |
| N731_02 | 16 | Quercus rubra | American Oak | 64.3 | 918.7773 |
| N731_02 | 17 | Quercus rubra | American Oak | 56.2 | 688.7704 |
| N731_02 | 18 | Quercus rubra | American Oak | 48.4 | 500.2739 |
| N731_02 | 19 | Quercus rubra | American Oak | 48.3 | 498.0646 |
| N731_02 | 20 | Quercus rubra | American Oak | 33 | 220.4239 |
| N731_02 | 21 | Quercus rubra | American Oak | 30.7 | 188.8491 |
| N731_02 | 22 | Quercus rubra | American Oak | 40.3 | 338.0583 |
| N731_02 | 23 | Quercus rubra | American Oak | 41.1 | 352.5821 |
| N731_02 | 24 | Quercus rubra | American Oak | 23.1 | 102.7468 |
| N731_02 | 25 | Quercus rubra | American Oak | 16.9 | 52.64005 |
| N731_02 | 26 | Quercus rubra | American Oak | 14.1 | 35.72463 |
| N731_02 | 27 | Quercus rubra | American Oak | 10.2 | 17.86665 |
| N731_02 | 28 | Quercus rubra | American Oak | 16.3 | 48.72146 |
| N731_02 | 29 | Quercus rubra | American Oak | 40.9 | 348.9206 |
| N731_02 | 30 | Quercus rubra | American Oak | 42.4 | 376.8788 |
| N731_02 | 31 | Quercus rubra | American Oak | 36 | 265.5377 |
| N731_02 | 32 | Quercus rubra | American Oak | 33.1 | 221.8557 |
| N731_02 | 33 | Quercus rubra | American Oak | 68.6 | 1055.291 |
| N731_02 | 34 | Quercus rubra | American Oak | 43.5 | 398.1125 |
| N731_02 | 35 | Quercus rubra | American Oak | 38.2 | 301.4771 |
| N731_02 | 36 | Quercus rubra | American Oak | 54.3 | 639.8975 |
| N731_02 | 37 | Quercus rubra | American Oak | 16 | 46.8226 |
| N731_02 | 38 | Quercus rubra | American Oak | 27.6 | 150.378 |
| N731_02 | 39 | Quercus rubra | American Oak | 40.9 | 348.9206 |
| N731_02 | 40 | Quercus rubra | American Oak | 52.2 | 588.1034 |
| N731_02 | 41 | Quercus rubra | American Oak | 31.9 | 204.9986 |
| N731_02 | 42 | Quercus rubra | American Oak | 40.4 | 339.856 |
| N731_02 | 43 | Quercus rubra | American Oak | 64.6 | 927.9752 |
| N731_02 | 44 | Quercus rubra | American Oak | 27 | 143.4687 |
| N731_02 | 45 | Quercus rubra | American Oak | 35.3 | 254.6107 |
| N731_02 | 46 | Quercus rubra | American Oak | 48 | 491.4678 |
| N731_02 | 47 | Quercus rubra | American Oak | 46.9 | 467.6799 |
| N731_02 | 48 | Quercus rubra | American Oak | 43 | 388.3839 |
| N731_02 | 49 | Quercus rubra | American Oak | 30.7 | 188.8491 |

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| N731_02 | 50 | Quercus rubra | American Oak | 40.8 | 347.0975 |
| N731_02 | 51 | Quercus rubra | American Oak | 33.7 | 230.5509 |
| N731_02 | 52 | Quercus rubra | American Oak | 46.8 | 465.5485 |
| N731_02 | 53 | Quercus rubra | American Oak | 35.4 | 256.1567 |
| N731_02 | 54 | Quercus rubra | American Oak | 30.3 | 183.6225 |
| N731_02 | 55 | Quercus rubra | American Oak | 48.3 | 498.0646 |
| N731_02 | 56 | Quercus rubra | American Oak | 45.3 | 434.1991 |
| N731_02 | 57 | Quercus rubra | American Oak | 52 | 583.2919 |
| N731_02 | 58 | Quercus rubra | American Oak | 59.5 | 778.2248 |
| N731_02 | 59 | Quercus rubra | American Oak | 36.6 | 275.0985 |
| N731_02 | 60 | Quercus rubra | American Oak | 26.9 | 142.334 |
| N731_02 | 61 | Quercus rubra | American Oak | 37.6 | 291.4344 |
| N731_02 | 62 | Quercus rubra | American Oak | 12.4 | 27.13696 |
| N731_02 | 63 | Quercus rubra | American Oak | 26 | 132.3371 |
| N731_02 | 64 | Quercus rubra | American Oak | 75.8 | 1306.565 |
| N731_02 | 65 | Quercus rubra | American Oak | 36.2 | 268.7046 |
| N731_02 | 67 | Quercus rubra | American Oak | 37 | 281.5726 |
| N731_02 | 68 | Quercus rubra | American Oak | 45.2 | 432.1505 |
| N731_02 | 69 | Quercus rubra | American Oak | 11.7 | 23.96385 |
| N731_02 | 70 | Quercus rubra | American Oak | 7.4 | 8.990724 |
| N731_02 | 71 | Quercus rubra | American Oak | 36.9 | 279.9466 |
| N731_02 | 72 | Quercus rubra | American Oak | 48.2 | 495.8604 |
| N731_02 | 73 | Quercus rubra | American Oak | 14.1 | 35.72463 |
| N731_02 | 74 | Quercus rubra | American Oak | 27.3 | 146.9017 |
| N731_03 | 1 | Betula pendula | European White Birch | 40.5 | 92.45837 |
| N731_03 | 2 | Betula pendula | European White Birch | 38 | 78.84191 |
| N731_03 | 3 | Betula pendula | European White Birch | 35.4 | 66.03811 |
| N731_03 | 4 | Quercus rubra | American Oak | 57.9 | 734.1265 |
| N731_03 | 5 | Quercus rubra | American Oak | 57.4 | 720.6265 |
| N731_03 | 6 | Quercus rubra | American Oak | 51.5 | 571.3553 |
| N731_03 | 7 | Quercus rubra | American Oak | 68.5 | 1052.002 |
| N731_03 | 8 | Quercus rubra | American Oak | 63.8 | 903.5559 |
| N731_03 | 9 | Quercus rubra | American Oak | 52 | 583.2919 |
| N731_03 | 10 | Quercus rubra | American Oak | 56.5 | 696.6625 |
| N731_03 | 11 | Quercus rubra | American Oak | 54.3 | 639.8975 |
| N731_03 | 12 | Quercus rubra | American Oak | 57 | 709.9225 |
| N731_03 | 13 | Quercus rubra | American Oak | 49.4 | 522.6542 |
| N731_03 | 14 | Quercus rubra | American Oak | 55.3 | 665.3813 |
| N731_03 | 15 | Quercus rubra | American Oak | 41.3 | 356.264 |
| N731_03 | 16 | Quercus rubra | American Oak | 57.4 | 720.6265 |
| N731_05 | 1 | Quercus rubra | American Oak | 26 | 132.3371 |

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| N731_05 | 2 | Quercus rubra | American Oak | 34.8 | 246.9553 |
| N731_05 | 3 | Quercus rubra | American Oak | 17.6 | 57.41639 |
| N731_05 | 4 | Quercus rubra | American Oak | 48.6 | 504.7082 |
| N731_05 | 5 | Quercus rubra | American Oak | 28.6 | 162.2789 |
| N731_05 | 6 | Quercus rubra | American Oak | 35.8 | 262.3907 |
| N731_05 | 7 | Quercus rubra | American Oak | 40.7 | 345.2795 |
| N731_05 | 8 | Quercus rubra | American Oak | 48.1 | 493.6615 |
| N731_05 | 9 | Quercus rubra | American Oak | 33 | 220.4239 |
| N731_05 | 10 | Quercus rubra | American Oak | 23.3 | 104.6599 |
| N731_05 | 11 | Quercus rubra | American Oak | 43.8 | 404.0112 |
| N732_01 | 1 | Betula pendula | European White Birch | 30.3 | 44.75766 |
| N732_01 | 2 | Betula pendula | European White Birch | 22.4 | 21.0296 |
| N732_01 | 3 | Betula pendula | European White Birch | 34.6 | 62.3696 |
| N732_01 | 4 | Betula pendula | European White Birch | 33.8 | 58.82617 |
| N732_01 | 5 | Betula pendula | European White Birch | 13.5 | 5.928732 |
| N732_01 | 6 | Betula pendula | European White Birch | 29 | 40.10962 |
| N732_01 | 7 | Betula pendula | European White Birch | 30.8 | 46.6273 |
| N732_03 | 1 | Quercus rubra | American Oak | 54.5 | 644.9519 |
| N732_03 | 2 | Quercus rubra | American Oak | 47.5 | 480.5771 |
| N732_03 | 3 | Quercus rubra | American Oak | 49.4 | 522.6542 |
| N732_03 | 4 | Quercus rubra | American Oak | 51 | 559.5501 |
| N732_03 | 5 | Quercus rubra | American Oak | 41 | 350.7488 |
| N732_05 | 1 | Quercus rubra | American Oak | 20 | 75.48193 |
| N732_05 | 2 | Quercus rubra | American Oak | 20.1 | 76.29188 |
| N732_05 | 3 | Quercus rubra | American Oak | 23.2 | 103.701 |
| N732_05 | 4 | Quercus rubra | American Oak | 16 | 46.8226 |
| N732_05 | 5 | Quercus rubra | American Oak | 18.3 | 62.4143 |
| N732_05 | 6 | Quercus rubra | American Oak | 11.5 | 23.09575 |
| N732_06 | 1 | Quercus rubra | American Oak | 20.5 | 79.57782 |
| N732_06 | 2 | Quercus rubra | American Oak | 17.8 | 58.8217 |
| N732_06 | 3 | Quercus rubra | American Oak | 13.1 | 30.52104 |
| N732_06 | 4 | Quercus rubra | American Oak | 23.1 | 102.7468 |
| N732_06 | 5 | Quercus rubra | American Oak | 12 | 25.29803 |
| N732_06 | 6 | Quercus rubra | American Oak | 16.8 | 51.97574 |
| N732_06 | 7 | Quercus rubra | American Oak | 11.6 | 23.52767 |
| N732_06 | 8 | Quercus rubra | American Oak | 12.9 | 29.53254 |
| N732_06 | 9 | Quercus rubra | American Oak | 16.8 | 51.97574 |
| N732_06 | 10 | Quercus rubra | American Oak | 18.6 | 64.62439 |
| N732_06 | 11 | Quercus rubra | American Oak | 20.4 | 78.74942 |
| N732_06 | 12 | Quercus rubra | American Oak | 20.5 | 79.57782 |
| N732_06 | 13 | Quercus rubra | American Oak | 19.8 | 73.87582 |

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|---|---|---|---|---|---|
| N732_06 | 14 | Quercus rubra | American Oak | 22.6 | 98.04622 |
| N732_06 | 15 | Quercus rubra | American Oak | 20.6 | 80.41085 |
| N732_06 | 16 | Quercus rubra | American Oak | 17 | 53.30887 |
| N732_06 | 17 | Quercus rubra | American Oak | 22.1 | 93.46268 |
| N732_06 | 18 | Quercus rubra | American Oak | 23.2 | 103.701 |
| N732_06 | 19 | Quercus rubra | American Oak | 21.1 | 84.64537 |
| N732_09 | 1 | Quercus rubra | American Oak | 37 | 281.5726 |
| N732_09 | 2 | Quercus rubra | American Oak | 33.5 | 227.6327 |
| N732_09 | 3 | Quercus rubra | American Oak | 32.8 | 217.5749 |
| N732_09 | 4 | Quercus rubra | American Oak | 39 | 315.1498 |
| N732_09 | 5 | Quercus rubra | American Oak | 20.7 | 81.24849 |
| N732_09 | 6 | Quercus rubra | American Oak | 35.2 | 253.0697 |
| N732_09 | 7 | Quercus rubra | American Oak | 29.5 | 173.4035 |
| N732_09 | 8 | Quercus rubra | American Oak | 35.9 | 263.9617 |
| N732_09 | 9 | Quercus rubra | American Oak | 26.5 | 137.8431 |
| N732_09 | 10 | Quercus rubra | American Oak | 30.8 | 190.1679 |
| N732_09 | 11 | Quercus rubra | American Oak | 25 | 121.6831 |
| N732_09 | 12 | Quercus rubra | American Oak | 34 | 234.9653 |
| N732_09 | 13 | Quercus rubra | American Oak | 22.5 | 97.12016 |
| N732_09 | 14 | Quercus rubra | American Oak | 41.7 | 363.6888 |
| N732_09 | 15 | Quercus rubra | American Oak | 30 | 179.7539 |
| N732_09 | 16 | Quercus rubra | American Oak | 33.1 | 221.8557 |
| N732_09 | 17 | Quercus rubra | American Oak | 25.2 | 123.7759 |
| N732_09 | 18 | Quercus rubra | American Oak | 38.5 | 306.5665 |
| N732_09 | 19 | Quercus rubra | American Oak | 36 | 265.5377 |
| N732_09 | 20 | Quercus rubra | American Oak | 32.8 | 217.5749 |
| N732_09 | 21 | Quercus rubra | American Oak | 23.2 | 103.701 |
| N732_09 | 22 | Quercus rubra | American Oak | 47.3 | 476.2573 |
| N732_09 | 23 | Quercus rubra | American Oak | 24.5 | 116.5344 |
| N732_09 | 24 | Quercus rubra | American Oak | 44.9 | 426.0357 |
| N732_09 | 25 | Quercus rubra | American Oak | 27 | 143.4687 |
| N732_09 | 26 | Quercus rubra | American Oak | 42.9 | 386.4536 |
| N732_09 | 27 | Quercus rubra | American Oak | 35.5 | 257.7077 |
| N732_09 | 28 | Quercus rubra | American Oak | 35 | 250.0025 |
| N732_09 | 29 | Quercus rubra | American Oak | 24.4 | 115.5189 |
| N732_09 | 30 | Quercus rubra | American Oak | 35.5 | 257.7077 |
| N732_09 | 31 | Quercus rubra | American Oak | 22.3 | 95.28207 |
| N732_09 | 32 | Quercus rubra | American Oak | 34.3 | 239.4243 |
| N732_09 | 33 | Quercus rubra | American Oak | 38.6 | 308.2731 |
| N732_09 | 34 | Quercus rubra | American Oak | 25.1 | 122.7271 |
| N732_09 | 35 | Quercus rubra | American Oak | 26.8 | 141.2041 |

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|---|---|---|---|---|---|
| N732_09 | 36 | Quercus rubra | American Oak | 30.5 | 186.2261 |
| N732_09 | 37 | Quercus rubra | American Oak | 43 | 388.3839 |
| N732_09 | 38 | Quercus rubra | American Oak | 45 | 428.0688 |
| N732_11 | 1 | Betula pendula | European White Birch | 15.3 | 8.107307 |
| N732_11 | 2 | Betula pendula | European White Birch | 23.8 | 24.47165 |
| N732_11 | 3 | Betula pendula | European White Birch | 15.1 | 7.844915 |
| N732_11 | 4 | Betula pendula | European White Birch | 18 | 12.17184 |
| N732_11 | 5 | Betula pendula | European White Birch | 12.6 | 4.989331 |
| N732_11 | 6 | Betula pendula | European White Birch | 26.2 | 31.11645 |
| N732_11 | 7 | Betula pendula | European White Birch | 16.9 | 10.39636 |
| N732_11 | 8 | Betula pendula | European White Birch | 24.1 | 25.25025 |
| N732_11 | 9 | Betula pendula | European White Birch | 13.7 | 6.150794 |
| N732_11 | 10 | Betula pendula | European White Birch | 17 | 10.55086 |
| N732_11 | 11 | Betula pendula | European White Birch | 13.9 | 6.377775 |
| N732_11 | 12 | Betula pendula | European White Birch | 15 | 7.715657 |
| N732_11 | 13 | Betula pendula | European White Birch | 19.8 | 15.44733 |
| N732_11 | 14 | Betula pendula | European White Birch | 27.1 | 33.85833 |
| N732_11 | 15 | Betula pendula | European White Birch | 17.8 | 11.83649 |
| N732_11 | 16 | Betula pendula | European White Birch | 25.1 | 27.95207 |
| N732_11 | 17 | Betula pendula | European White Birch | 25.4 | 28.79493 |
| N732_11 | 18 | Betula pendula | European White Birch | 18.3 | 12.68543 |
| N732_11 | 19 | Betula pendula | European White Birch | 23.3 | 23.20637 |
| N732_11 | 20 | Betula pendula | European White Birch | 19.2 | 14.30338 |
| N732_11 | 21 | Betula pendula | European White Birch | 14.5 | 7.088579 |
| N732_11 | 22 | Betula pendula | European White Birch | 23.7 | 24.21537 |
| N732_14 | 1 | Betula pendula | European White Birch | 25.7 | 29.65285 |
| N732_14 | 2 | Betula pendula | European White Birch | 23.2 | 22.95814 |
| N732_14 | 3 | Betula pendula | European White Birch | 19.1 | 14.11783 |
| N732_14 | 4 | Betula pendula | European White Birch | 20.6 | 17.05553 |
| N732_14 | 5 | Betula pendula | European White Birch | 24.3 | 25.77746 |
| N732_14 | 6 | Betula pendula | European White Birch | 16.9 | 10.39636 |
| N732_14 | 7 | Betula pendula | European White Birch | 22.2 | 20.56326 |
| N732_14 | 8 | Betula pendula | European White Birch | 32.7 | 54.15552 |
| N732_14 | 9 | Betula pendula | European White Birch | 16.5 | 9.791976 |
| N732_14 | 10 | Betula pendula | European White Birch | 31.7 | 50.10908 |
| N732_14 | 11 | Betula pendula | European White Birch | 14.7 | 7.335585 |
| N732_14 | 12 | Betula pendula | European White Birch | 24.9 | 27.3985 |
| N732_14 | 13 | Betula pendula | European White Birch | 26.2 | 31.11645 |
| N732_14 | 14 | Betula pendula | European White Birch | 29.3 | 41.15516 |
| N732_14 | 15 | Betula pendula | European White Birch | 18.3 | 12.68543 |
| N732_14 | 16 | Betula pendula | European White Birch | 22.2 | 20.56326 |

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|---|---|---|---|---|---|
| N732_14 | 17 | Betula pendula | European White Birch | 27.5 | 35.12178 |
| N732_14 | 18 | Betula pendula | European White Birch | 26.5 | 32.01499 |
| N732_14 | 19 | Betula pendula | European White Birch | 23.3 | 23.20637 |
| N732_14 | 20 | Betula pendula | European White Birch | 28.8 | 39.42154 |
| N732_14 | 21 | Betula pendula | European White Birch | 19.5 | 14.86875 |
| N732_14 | 22 | Betula pendula | European White Birch | 23.3 | 23.20637 |
| N732_14 | 23 | Betula pendula | European White Birch | 17.9 | 12.00346 |
| N732_14 | 24 | Betula pendula | European White Birch | 24.5 | 26.31122 |
| N732_14 | 25 | Betula pendula | European White Birch | 16 | 9.066828 |
| N732_14 | 26 | Betula pendula | European White Birch | 32.5 | 53.33113 |
| N732_14 | 27 | Betula pendula | European White Birch | 21.2 | 18.3249 |
| N732_14 | 28 | Betula pendula | European White Birch | 15.2 | 7.975463 |
| N732_14 | 29 | Betula pendula | European White Birch | 17.4 | 11.18259 |
| N732_14 | 30 | Betula pendula | European White Birch | 16.7 | 10.09145 |
| N732_14 | 31 | Betula pendula | European White Birch | 33.5 | 57.52934 |
| N732_14 | 32 | Betula pendula | European White Birch | 13.5 | 5.928732 |
| N732_14 | 33 | Betula pendula | European White Birch | 19.4 | 14.67883 |
| N732_14 | 34 | Betula pendula | European White Birch | 26.6 | 32.31792 |
| N732_14 | 35 | Betula pendula | European White Birch | 15.5 | 8.374896 |
| N732_14 | 36 | Betula pendula | European White Birch | 17.9 | 12.00346 |
| N732_14 | 37 | Betula pendula | European White Birch | 25 | 27.67445 |
| N732_14 | 38 | Betula pendula | European White Birch | 14 | 6.49312 |
| N732_14 | 39 | Betula pendula | European White Birch | 12.3 | 4.697586 |
| N732_14 | 40 | Betula pendula | European White Birch | 19.9 | 15.64315 |
| N732_14 | 41 | Betula pendula | European White Birch | 19.6 | 15.06014 |
| N732_17 | 1 | Betula pendula | European White Birch | 61.3 | 260.6323 |
| N732_17 | 2 | Betula pendula | European White Birch | 38.7 | 82.52368 |
| N732_17 | 3 | Betula pendula | European White Birch | 48.5 | 145.1085 |
| N732_17 | 4 | Betula pendula | European White Birch | 59.8 | 244.9774 |
| N732_17 | 5 | Betula pendula | European White Birch | 48.2 | 142.8746 |
| N732_17 | 6 | Betula pendula | European White Birch | 50.7 | 162.1308 |
| N732_17 | 7 | Betula pendula | European White Birch | 48.7 | 146.6093 |
| N732_17 | 8 | Betula pendula | European White Birch | 41.8 | 100.0586 |
| N732_17 | 9 | Betula pendula | European White Birch | 30.5 | 45.50001 |
| N732_17 | 10 | Betula pendula | European White Birch | 62.3 | 271.3938 |
| N732_17 | 11 | Betula pendula | European White Birch | 9.9 | 2.73001 |
| N732_17 | 12 | Betula pendula | European White Birch | 6 | 0.780498 |
| N732_17 | 13 | Betula pendula | European White Birch | 58.9 | 235.8624 |
| N732_17 | 14 | Betula pendula | European White Birch | 67.2 | 327.9559 |
| N732_17 | 15 | Betula pendula | European White Birch | 37 | 73.75612 |
| N732_17 | 16 | Betula pendula | European White Birch | 57.8 | 225.0023 |

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|---|---|---|---|---|---|
| N732_17 | 17 | Betula pendula | European White Birch | 37.1 | 74.25556 |
| N732_17 | 18 | Betula pendula | European White Birch | 43.1 | 108.022 |
| N732_17 | 19 | Betula pendula | European White Birch | 51 | 164.5403 |
| N732_17 | 20 | Betula pendula | European White Birch | 40.2 | 90.75542 |
| N732_17 | 21 | Betula pendula | European White Birch | 54.9 | 197.8289 |
| N732_17 | 22 | Betula pendula | European White Birch | 42 | 101.26 |
| N732_17 | 23 | Betula pendula | European White Birch | 59.7 | 243.9543 |
| N732_17 | 24 | Betula pendula | European White Birch | 43.1 | 108.022 |
| N732_17 | 25 | Betula pendula | European White Birch | 52.9 | 180.2984 |
| N732_17 | 26 | Betula pendula | European White Birch | 36.9 | 73.2587 |
| N732_17 | 27 | Betula pendula | European White Birch | 41.5 | 98.27271 |
| N732_17 | 28 | Betula pendula | European White Birch | 43.2 | 108.6497 |
| N732_17 | 29 | Betula pendula | European White Birch | 52.6 | 177.7527 |
| N732_17 | 30 | Betula pendula | European White Birch | 49.1 | 149.6388 |
| N732_17 | 31 | Betula pendula | European White Birch | 48 | 141.3969 |
| N732_17 | 32 | Betula pendula | European White Birch | 37.7 | 77.29479 |
| N732_17 | 33 | Betula pendula | European White Birch | 37.3 | 75.26051 |
| N732_17 | 34 | Betula pendula | European White Birch | 48 | 141.3969 |
| N732_17 | 35 | Betula pendula | European White Birch | 48.2 | 142.8746 |
| N732_17 | 36 | Betula pendula | European White Birch | 38.6 | 81.99153 |
| N732_17 | 37 | Betula pendula | European White Birch | 45.9 | 126.4332 |
| N732_17 | 38 | Betula pendula | European White Birch | 56.1 | 208.8188 |
| N732_17 | 39 | Betula pendula | European White Birch | 50.3 | 158.9514 |
| N732_17 | 40 | Betula pendula | European White Birch | 39.8 | 88.51431 |
| N732_17 | 41 | Betula pendula | European White Birch | 41.3 | 97.0928 |
| N732_17 | 42 | Betula pendula | European White Birch | 52.6 | 177.7527 |
| N732_17 | 43 | Betula pendula | European White Birch | 54.7 | 196.0318 |
| N732_17 | 44 | Betula pendula | European White Birch | 46.6 | 131.3096 |
| N732_17 | 45 | Betula pendula | European White Birch | 6.8 | 1.0673 |
| N732_17 | 46 | Betula pendula | European White Birch | 7.9 | 1.552768 |
| N732_17 | 47 | Betula pendula | European White Birch | 41.8 | 100.0586 |
| N732_17 | 48 | Betula pendula | European White Birch | 50 | 156.5916 |
| N732_17 | 49 | Betula pendula | European White Birch | 45.5 | 123.6962 |
| N732_17 | 50 | Betula pendula | European White Birch | 46 | 127.123 |
| N732_17 | 51 | Betula pendula | European White Birch | 49.8 | 155.0301 |
| N732_17 | 52 | Betula pendula | European White Birch | 48.2 | 142.8746 |
| N732_17 | 53 | Betula pendula | European White Birch | 48.5 | 145.1085 |
| N732_17 | 54 | Betula pendula | European White Birch | 50.1 | 157.3759 |
| N732_17 | 55 | Betula pendula | European White Birch | 45.8 | 125.7456 |
| N732_17 | 56 | Betula pendula | European White Birch | 6.6 | 0.990533 |
| N732_17 | 57 | Betula pendula | European White Birch | 50.8 | 162.9316 |

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| N732_17 | 58 | Betula pendula | European White Birch | 16.1 | 9.209183 |
| N732_17 | 59 | Betula pendula | European White Birch | 8 | 1.602382 |
| N732_17 | 60 | Betula pendula | European White Birch | 6.2 | 0.847185 |
| N732_17 | 61 | Betula pendula | European White Birch | 50.5 | 160.5364 |
| N732_17 | 62 | Betula pendula | European White Birch | 37.8 | 77.80845 |
| N732_17 | 63 | Betula pendula | European White Birch | 47.7 | 139.1976 |
| N732_17 | 64 | Betula pendula | European White Birch | 45.8 | 125.7456 |
| N732_17 | 65 | Betula pendula | European White Birch | 57.3 | 220.1671 |
| N732_17 | 66 | Betula pendula | European White Birch | 62.3 | 271.3938 |
| N732_17 | 67 | Betula pendula | European White Birch | 60 | 247.0311 |
| N732_17 | 68 | Betula pendula | European White Birch | 49.3 | 151.1675 |
| N732_17 | 69 | Betula pendula | European White Birch | 62.1 | 269.2206 |
| N732_17 | 70 | Betula pendula | European White Birch | 52.8 | 179.4474 |
| N732_17 | 71 | Betula pendula | European White Birch | 56.1 | 208.8188 |
| N732_17 | 72 | Betula pendula | European White Birch | 47.4 | 137.0189 |
| N732_17 | 73 | Betula pendula | European White Birch | 57.9 | 225.9769 |
| N732_17 | 74 | Betula pendula | European White Birch | 57.2 | 219.2077 |
| N732_17 | 75 | Betula pendula | European White Birch | 63.4 | 283.5344 |
| N732_17 | 76 | Betula pendula | European White Birch | 58.7 | 233.865 |
| N732_17 | 77 | Betula pendula | European White Birch | 6.2 | 0.847185 |
| N732_17 | 78 | Betula pendula | European White Birch | 70.8 | 373.6664 |
| N732_17 | 79 | Betula pendula | European White Birch | 8.3 | 1.756881 |
| N732_17 | 80 | Betula pendula | European White Birch | 48 | 141.3969 |
| N732_17 | 81 | Quercus robur | English Oak | 13.4 | 32.03635 |
| N732_17 | 82 | Quercus robur | English Oak | 52.6 | 597.7895 |
| N732_P1 | 1 | Fagus sylvatica | European Beech | 27.7 | 126.1975 |
| N732_P1 | 2 | Quercus rubra | American Oak | 27.9 | 153.8976 |
| N732_P1 | 3 | Quercus rubra | American Oak | 26.2 | 134.5252 |
| N732_P1 | 4 | Quercus rubra | American Oak | 16.8 | 51.97574 |
| N732_P1 | 5 | Quercus rubra | American Oak | 30.5 | 186.2261 |
| N732_P1 | 6 | Quercus rubra | American Oak | 33.6 | 229.0893 |
| N732_P1 | 7 | Quercus rubra | American Oak | 33.5 | 227.6327 |
| N732_P1 | 8 | Quercus rubra | American Oak | 16 | 46.8226 |
| N732_P1 | 9 | Quercus rubra | American Oak | 27.7 | 151.5464 |
| N732_P1 | 10 | Quercus rubra | American Oak | 25.8 | 130.1682 |
| N732_P1 | 11 | Quercus rubra | American Oak | 18.2 | 61.6867 |
| N732_P1 | 12 | Quercus rubra | American Oak | 18 | 60.24513 |
| N732_P1 | 13 | Quercus rubra | American Oak | 22.1 | 93.46268 |
| N732_P1 | 14 | Quercus rubra | American Oak | 23 | 101.7973 |
| N732_P1 | 15 | Quercus rubra | American Oak | 26.4 | 136.7323 |
| N732_P2 | 1 | Quercus rubra | American Oak | 56.5 | 696.6625 |

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| N732_P2 | 2 | Quercus rubra | American Oak | 24.1 | 112.5007 |
| N732_P2 | 3 | Quercus rubra | American Oak | 63.4 | 891.4763 |
| N732_P2 | 4 | Quercus rubra | American Oak | 59.7 | 783.8335 |
| N732_P2 | 5 | Quercus rubra | American Oak | 44 | 407.9693 |
| N732_P2 | 6 | Quercus rubra | American Oak | 67.5 | 1019.41 |
| N733_03 | 1 | Betula pendula | European White Birch | 55.8 | 206.0379 |
| N733_03 | 2 | Quercus robur | English Oak | 75.2 | 1284.532 |
| N733_03 | 3 | Quercus robur | English Oak | 73.4 | 1219.631 |
| N733_03 | 4 | Quercus robur | English Oak | 65.2 | 946.5175 |
| N733_03 | 5 | Quercus robur | English Oak | 47.1 | 471.9582 |
| N733_03 | 6 | Quercus robur | English Oak | 67.6 | 1022.645 |
| N733_03 | 7 | Quercus robur | English Oak | 56.8 | 704.6026 |
| N733_03 | 8 | Quercus robur | English Oak | 70.8 | 1129.042 |
| N733_03 | 9 | Quercus robur | English Oak | 99.3 | 2328.682 |
| N733_03 | 10 | Quercus robur | English Oak | 50.5 | 547.8761 |
| N733_03 | 11 | Quercus robur | English Oak | 52.7 | 600.2242 |
| N733_03 | 12 | Quercus robur | English Oak | 54.4 | 642.422 |
| N733_03 | 13 | Quercus robur | English Oak | 38.9 | 313.423 |
| N733_03 | 14 | Quercus robur | English Oak | 56.1 | 686.1504 |
| N733_03 | 15 | Quercus robur | English Oak | 48 | 491.4678 |
| N733_03 | 16 | Quercus robur | English Oak | 59.4 | 775.4285 |
| N733_03 | 17 | Quercus robur | English Oak | 52.2 | 588.1034 |
| N733_03 | 18 | Quercus robur | English Oak | 49.4 | 522.6542 |
| N733_03 | 19 | Quercus robur | English Oak | 43.1 | 390.3194 |
| N733_03 | 20 | Quercus robur | English Oak | 37.6 | 291.4344 |
| N733_03 | 21 | Quercus robur | English Oak | 71.8 | 1163.443 |
| N733_03 | 22 | Quercus robur | English Oak | 46 | 448.684 |
| N733_03 | 23 | Quercus robur | English Oak | 59.4 | 775.4285 |
| N733_03 | 24 | Quercus robur | English Oak | 63.9 | 906.5894 |
| N733_03 | 25 | Quercus robur | English Oak | 47.9 | 489.2792 |
| N733_03 | 26 | Quercus robur | English Oak | 49.4 | 522.6542 |
| N733_03 | 27 | Quercus robur | English Oak | 55.3 | 665.3813 |
| N733_03 | 28 | Quercus robur | English Oak | 51.1 | 561.9006 |
| N733_03 | 29 | Quercus robur | English Oak | 47.7 | 484.9178 |
| N733_03 | 30 | Quercus robur | English Oak | 55 | 657.6805 |
| N733_03 | 31 | Quercus robur | English Oak | 66.3 | 981.0197 |
| N733_03 | 32 | Quercus robur | English Oak | 42.2 | 373.0847 |
| N733_03 | 33 | Quercus robur | English Oak | 57.3 | 717.9425 |
| N733_03 | 34 | Quercus robur | English Oak | 50.6 | 550.2004 |
| N733_03 | 35 | Quercus robur | English Oak | 42.8 | 384.5284 |
| N733_03 | 36 | Quercus robur | English Oak | 50.6 | 550.2004 |

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| N733_03 | 37 | Quercus robur | English Oak | 58.5 | 750.5028 |
| N733_03 | 38 | Quercus robur | English Oak | 45.8 | 444.5196 |
| N733_03 | 39 | Quercus robur | English Oak | 42.6 | 380.6934 |
| N733_03 | 40 | Quercus robur | English Oak | 61 | 820.8138 |
| N733_03 | 41 | Quercus robur | English Oak | 63.6 | 897.5053 |
| N733_03 | 42 | Quercus robur | English Oak | 64.5 | 924.9038 |
| N733_03 | 43 | Quercus robur | English Oak | 47.8 | 487.0959 |
| N733_03 | 44 | Quercus robur | English Oak | 46.4 | 457.0748 |
| N733_03 | 45 | Quercus robur | English Oak | 54.1 | 634.8643 |
| N733_03 | 46 | Quercus robur | English Oak | 45.9 | 446.5992 |
| N733_03 | 47 | Quercus robur | English Oak | 51.6 | 573.7321 |
| N733_03 | 48 | Quercus robur | English Oak | 57.2 | 715.2639 |
| N733_03 | 49 | Quercus robur | English Oak | 48.6 | 504.7082 |
| N733_03 | 50 | Quercus robur | English Oak | 44.7 | 421.9849 |
| N733_03 | 51 | Quercus robur | English Oak | 35.4 | 256.1567 |
| N733_03 | 52 | Quercus robur | English Oak | 55.3 | 665.3813 |
| N733_03 | 53 | Quercus robur | English Oak | 40.1 | 334.4781 |
| N733_03 | 54 | Quercus robur | English Oak | 55.9 | 680.9262 |
| N733_03 | 55 | Quercus robur | English Oak | 48.2 | 495.8604 |
| N733_03 | 56 | Quercus robur | English Oak | 54.3 | 639.8975 |
| N733_03 | 57 | Quercus robur | English Oak | 43.3 | 394.2057 |
| N733_03 | 58 | Quercus robur | English Oak | 43.7 | 402.0398 |
| N733_03 | 59 | Quercus robur | English Oak | 42.9 | 386.4536 |
| N733_03 | 60 | Quercus robur | English Oak | 47.1 | 471.9582 |
| N733_03 | 61 | Quercus robur | English Oak | 42.6 | 380.6934 |
| N733_03 | 62 | Quercus robur | English Oak | 38.9 | 313.423 |
| N733_03 | 63 | Quercus robur | English Oak | 31.6 | 200.895 |
| N733_03 | 64 | Quercus robur | English Oak | 44.6 | 419.9672 |
| N733_03 | 65 | Quercus robur | English Oak | 33.4 | 226.1811 |
| N733_03 | 66 | Quercus robur | English Oak | 38.3 | 303.1686 |
| N733_03 | 67 | Quercus robur | English Oak | 75.3 | 1288.19 |
| N733_03 | 68 | Quercus robur | English Oak | 36.7 | 276.7096 |
| N733_03 | 69 | Quercus robur | English Oak | 52.6 | 597.7895 |
| N733_04 | 1 | Quercus robur | English Oak | 57.8 | 731.4158 |
| N733_04 | 2 | Quercus robur | English Oak | 78 | 1389.061 |
| N733_04 | 3 | Quercus robur | English Oak | 64.8 | 934.1342 |
| N733_04 | 4 | Quercus robur | English Oak | 65.1 | 943.4135 |
| N733_04 | 5 | Quercus robur | English Oak | 73.4 | 1219.631 |
| N733_04 | 6 | Quercus robur | English Oak | 64.2 | 915.7222 |
| N733_04 | 7 | Quercus robur | English Oak | 60.6 | 809.3385 |
| N733_04 | 8 | Quercus robur | English Oak | 66.7 | 993.7292 |

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| N733_04 | 9 | Quercus robur | English Oak | 54.3 | 639.8975 |
| N733_04 | 10 | Quercus robur | English Oak | 71.8 | 1163.443 |
| N733_04 | 11 | Quercus robur | English Oak | 59.8 | 786.646 |
| N733_04 | 12 | Quercus robur | English Oak | 44.5 | 417.9547 |
| N733_04 | 13 | Quercus robur | English Oak | 65.3 | 949.6269 |
| N733_04 | 14 | Quercus robur | English Oak | 56.5 | 696.6625 |
| N733_04 | 15 | Quercus robur | English Oak | 57.4 | 720.6265 |
| N733_04 | 16 | Quercus robur | English Oak | 49.3 | 520.3927 |
| N733_04 | 17 | Quercus robur | English Oak | 49.8 | 531.7525 |
| N733_04 | 18 | Quercus robur | English Oak | 51.7 | 576.1141 |
| N733_04 | 19 | Quercus robur | English Oak | 49.4 | 522.6542 |
| N733_04 | 20 | Quercus robur | English Oak | 53.6 | 622.374 |
| N733_04 | 21 | Quercus robur | English Oak | 56.9 | 707.2599 |
| N733_05 | 1 | Fagus sylvatica | European Beech | 57.8 | 854.9392 |
| N733_05 | 2 | Fagus sylvatica | European Beech | 40.1 | 330.3235 |
| N733_05 | 3 | Fagus sylvatica | European Beech | 49.3 | 565.2698 |
| N733_05 | 4 | Fagus sylvatica | European Beech | 35.9 | 247.7203 |
| N733_05 | 5 | Fagus sylvatica | European Beech | 48.6 | 544.6304 |
| N733_05 | 6 | Fagus sylvatica | European Beech | 42 | 372.591 |
| N733_05 | 7 | Fagus sylvatica | European Beech | 35.8 | 245.9295 |
| N733_05 | 8 | Fagus sylvatica | European Beech | 49.2 | 562.2923 |
| N733_05 | 9 | Fagus sylvatica | European Beech | 45.3 | 453.5993 |
| N733_05 | 10 | Fagus sylvatica | European Beech | 56.8 | 816.9979 |
| N733_05 | 11 | Fagus sylvatica | European Beech | 59.9 | 938.0977 |
| N733_05 | 12 | Fagus sylvatica | European Beech | 62.9 | 1065.249 |
| N733_05 | 13 | Fagus sylvatica | European Beech | 62.5 | 1047.719 |
| N733_05 | 14 | Fagus sylvatica | European Beech | 77 | 1802.699 |
| N733_05 | 15 | Fagus sylvatica | European Beech | 53.5 | 699.2124 |
| N733_05 | 16 | Fagus sylvatica | European Beech | 56 | 787.4047 |
| N733_05 | 17 | Fagus sylvatica | European Beech | 46 | 472.0566 |
| N733_05 | 18 | Fagus sylvatica | European Beech | 56.4 | 802.1173 |
| N733_05 | 19 | Fagus sylvatica | European Beech | 47.4 | 510.3409 |
| N733_05 | 20 | Fagus sylvatica | European Beech | 49 | 556.3664 |
| N733_05 | 21 | Fagus sylvatica | European Beech | 41.4 | 358.9044 |
| N733_05 | 22 | Fagus sylvatica | European Beech | 50.7 | 607.9763 |
| N733_05 | 23 | Fagus sylvatica | European Beech | 38.4 | 295.1253 |
| N733_05 | 24 | Fagus sylvatica | European Beech | 45.7 | 464.0908 |
| N733_05 | 25 | Fagus sylvatica | European Beech | 37.8 | 283.2808 |
| N733_05 | 26 | Fagus sylvatica | European Beech | 47.1 | 501.9822 |
| N733_05 | 27 | Fagus sylvatica | European Beech | 48.7 | 547.55 |
| N733_05 | 28 | Fagus sylvatica | European Beech | 34.6 | 225.0598 |

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| N733_05 | 29 | Fagus sylvatica | European Beech | 45.5 | 458.8266 |
| N733_05 | 30 | Fagus sylvatica | European Beech | 42.4 | 381.8911 |
| N733_05 | 31 | Fagus sylvatica | European Beech | 45.7 | 464.0908 |
| N733_05 | 32 | Fagus sylvatica | European Beech | 39 | 307.2699 |
| N733_05 | 33 | Fagus sylvatica | European Beech | 38.2 | 291.1439 |
| N733_05 | 34 | Fagus sylvatica | European Beech | 42.2 | 377.2234 |
| N733_05 | 35 | Fagus sylvatica | European Beech | 58.4 | 878.2148 |
| N733_05 | 36 | Fagus sylvatica | European Beech | 59.4 | 917.8664 |
| N733_08 | 1 | Fagus sylvatica | European Beech | 47.5 | 513.1461 |
| N733_08 | 2 | Betula pendula | European White Birch | 54.3 | 192.4672 |
| N733_08 | 3 | Betula pendula | European White Birch | 123 | 1486.808 |
| N733_08 | 4 | Quercus robur | English Oak | 70.4 | 1115.435 |
| N733_08 | 5 | Quercus robur | English Oak | 67.9 | 1032.381 |
| N733_08 | 6 | Quercus robur | English Oak | 69.1 | 1071.82 |
| N733_08 | 7 | Quercus robur | English Oak | 57.6 | 726.0105 |
| N733_08 | 8 | Quercus robur | English Oak | 82.6 | 1570.276 |
| N733_08 | 9 | Quercus robur | English Oak | 60.6 | 809.3385 |
| N733_08 | 10 | Quercus robur | English Oak | 65.5 | 955.8619 |
| N733_08 | 11 | Quercus robur | English Oak | 30.6 | 187.5351 |
| N733_08 | 12 | Pinus nigra | Austrian_pine | 29.1 | 56.81718 |
| N733_08 | 13 | Pinus nigra | Austrian_pine | 34.5 | 89.0928 |
| N733_10 | 1 | Betula pendula | European White Birch | 79.3 | 496.138 |
| N733_10 | 2 | Quercus robur | English Oak | 60.1 | 795.1154 |
| N733_10 | 3 | Quercus robur | English Oak | 68.7 | 1058.586 |
| N733_10 | 4 | Quercus robur | English Oak | 56.5 | 696.6625 |
| N733_10 | 5 | Quercus robur | English Oak | 61.7 | 841.1027 |
| N733_10 | 6 | Quercus robur | English Oak | 54 | 632.3557 |
| N733_10 | 7 | Quercus robur | English Oak | 59.7 | 783.8335 |
| N733_10 | 8 | Quercus robur | English Oak | 64.4 | 921.8378 |
| N733_10 | 9 | Quercus robur | English Oak | 52.9 | 605.1094 |
| N733_10 | 10 | Quercus robur | English Oak | 59.9 | 789.4637 |
| N733_10 | 11 | Quercus robur | English Oak | 76.7 | 1339.988 |
| N733_10 | 12 | Quercus robur | English Oak | 49.9 | 534.0402 |
| N733_10 | 13 | Quercus robur | English Oak | 60.5 | 806.4831 |
| N733_10 | 14 | Quercus robur | English Oak | 74.7 | 1266.324 |
| N733_10 | 15 | Quercus robur | English Oak | 73.8 | 1233.898 |
| N733_10 | 16 | Quercus robur | English Oak | 53 | 607.56 |
| N733_10 | 17 | Quercus robur | English Oak | 62.8 | 873.5191 |
| N733_10 | 18 | Quercus robur | English Oak | 64.5 | 924.9038 |
| N733_10 | 19 | Quercus robur | English Oak | 66.2 | 977.8559 |
| N733_10 | 20 | Quercus robur | English Oak | 70.5 | 1118.828 |

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| N733_10 | 21 | Quercus robur | English Oak | 59.6 | 781.0265 |
| N733_10 | 22 | Quercus robur | English Oak | 60.7 | 812.1992 |
| N733_10 | 23 | Quercus robur | English Oak | 63.8 | 903.5559 |
| N733_10 | 24 | Quercus robur | English Oak | 67.6 | 1022.645 |
| N733_10 | 25 | Quercus robur | English Oak | 62 | 849.8788 |
| N733_10 | 26 | Quercus robur | English Oak | 14.7 | 39.05691 |
| N733_10 | 27 | Quercus robur | English Oak | 55.1 | 660.2421 |
| N733_10 | 28 | Quercus robur | English Oak | 56 | 683.5356 |
| N733_10 | 29 | Quercus robur | English Oak | 47.8 | 487.0959 |
| N733_10 | 30 | Quercus robur | English Oak | 48.2 | 495.8604 |
| N733_10 | 31 | Quercus robur | English Oak | 64.3 | 918.7773 |
| N733_10 | 32 | Quercus robur | English Oak | 47.5 | 480.5771 |
| N733_10 | 33 | Quercus robur | English Oak | 32 | 206.3763 |
| N733_10 | 34 | Quercus robur | English Oak | 42.4 | 376.8788 |
| N733_10 | 35 | Quercus robur | English Oak | 45.3 | 434.1991 |
| N733_10 | 36 | Quercus robur | English Oak | 35.4 | 256.1567 |
| N733_10 | 37 | Quercus robur | English Oak | 44.5 | 417.9547 |
| N733_10 | 38 | Quercus robur | English Oak | 40.5 | 341.6587 |
| N733_10 | 39 | Quercus robur | English Oak | 44.5 | 417.9547 |
| N733_10 | 40 | Quercus robur | English Oak | 52.4 | 592.9359 |
| N733_10 | 41 | Quercus robur | English Oak | 45.3 | 434.1991 |
| N734_01_1 | 1 | Quercus rubra | American Oak | 10.3 | 18.2436 |
| N734_01_1 | 2 | Quercus rubra | American Oak | 12.1 | 25.75132 |
| N734_01_1 | 3 | Quercus rubra | American Oak | 31.4 | 198.1838 |
| N734_02 | 1 | Betula pendula | European White Birch | 25.2 | 28.23135 |
| N734_02 | 2 | Betula pendula | European White Birch | 18.1 | 12.34162 |
| N734_02 | 3 | Betula pendula | European White Birch | 26.1 | 30.82034 |
| N734_02 | 4 | Betula pendula | European White Birch | 19.5 | 14.86875 |
| N734_02 | 5 | Betula pendula | European White Birch | 14.7 | 7.335585 |
| N734_02 | 6 | Betula pendula | European White Birch | 19 | 13.93374 |
| N734_02 | 7 | Betula pendula | European White Birch | 26.4 | 31.71377 |
| N734_02 | 8 | Betula pendula | European White Birch | 15.7 | 8.647716 |
| N734_02 | 9 | Betula pendula | European White Birch | 22.3 | 20.79564 |
| N734_02 | 10 | Betula pendula | European White Birch | 13.3 | 5.71155 |
| N734_02 | 11 | Betula pendula | European White Birch | 26.3 | 31.41426 |
| N734_02 | 12 | Betula pendula | European White Birch | 15.4 | 8.240449 |
| N734_02 | 13 | Betula pendula | European White Birch | 20.4 | 16.64451 |
| N734_02 | 14 | Betula pendula | European White Birch | 18.8 | 13.5699 |
| N734_02 | 15 | Betula pendula | European White Birch | 14 | 6.49312 |
| N734_02 | 16 | Betula pendula | European White Birch | 21.2 | 18.3249 |
| N734_02 | 17 | Betula pendula | European White Birch | 14.5 | 7.088579 |

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| N734_02 | 18 | Betula pendula | European White Birch | 23.4 | 23.45621 |
| N734_02 | 19 | Betula pendula | European White Birch | 19.5 | 14.86875 |
| N734_03 | 1 | Betula pendula | European White Birch | 33.8 | 58.82617 |
| N734_03 | 2 | Betula pendula | European White Birch | 15.4 | 8.240449 |
| N734_03 | 3 | Betula pendula | European White Birch | 24.9 | 27.3985 |
| N734_03 | 4 | Quercus rubra | American Oak | 36.7 | 276.7096 |
| N734_03 | 5 | Quercus rubra | American Oak | 29.2 | 169.6516 |
| N734_03 | 6 | Quercus rubra | American Oak | 32.7 | 216.1578 |
| N734_03 | 7 | Quercus rubra | American Oak | 31.8 | 203.6258 |
| N734_03 | 8 | Quercus rubra | American Oak | 30.4 | 184.9219 |
| N734_03 | 9 | Quercus rubra | American Oak | 18.7 | 65.3702 |
| N734_03 | 10 | Quercus rubra | American Oak | 29.3 | 170.8974 |
| N734_03 | 11 | Quercus rubra | American Oak | 41.4 | 358.1125 |
| N734_03 | 12 | Quercus rubra | American Oak | 39.8 | 329.146 |
| N734_03 | 13 | Quercus rubra | American Oak | 27.5 | 149.2144 |
| N734_03 | 14 | Quercus rubra | American Oak | 27.4 | 148.0556 |
| N734_03 | 15 | Quercus rubra | American Oak | 33.4 | 226.1811 |
| N734_03 | 16 | Quercus rubra | American Oak | 28.4 | 159.8601 |
| N734_03 | 17 | Quercus rubra | American Oak | 45.8 | 444.5196 |
| N734_03 | 18 | Quercus rubra | American Oak | 28.1 | 156.2681 |
| N734_03 | 19 | Quercus rubra | American Oak | 28.7 | 163.4956 |
| N734_03 | 20 | Quercus rubra | American Oak | 38.3 | 303.1686 |
| N734_03 | 21 | Quercus rubra | American Oak | 28.5 | 161.0671 |
| N734_03 | 22 | Quercus rubra | American Oak | 24.1 | 112.5007 |
| N734_03 | 23 | Quercus rubra | American Oak | 47.9 | 489.2792 |
| N734_03 | 24 | Quercus rubra | American Oak | 29.8 | 177.1991 |
| N734_03 | 25 | Quercus rubra | American Oak | 51 | 559.5501 |
| N734_04 | 1 | Quercus rubra | American Oak | 40.4 | 339.856 |
| N734_04 | 2 | Quercus rubra | American Oak | 39.1 | 316.8816 |
| N734_04 | 3 | Quercus rubra | American Oak | 32.7 | 216.1578 |
| N734_04 | 4 | Quercus rubra | American Oak | 35.4 | 256.1567 |
| N734_04 | 5 | Quercus rubra | American Oak | 32.6 | 214.7457 |
| N734_04 | 6 | Quercus rubra | American Oak | 38.4 | 304.865 |
| N734_04 | 7 | Quercus rubra | American Oak | 34.2 | 237.933 |
| N734_06 | 1 | Betula pendula | European White Birch | 18.9 | 13.7511 |
| N734_06 | 2 | Betula pendula | European White Birch | 17.7 | 11.67092 |
| N734_06 | 3 | Betula pendula | European White Birch | 13.4 | 5.819533 |
| N734_06 | 4 | Betula pendula | European White Birch | 9.1 | 2.211392 |
| N734_06 | 5 | Betula pendula | European White Birch | 12.7 | 5.088931 |
| N734_06 | 6 | Betula pendula | European White Birch | 14.7 | 7.335585 |
| N734_06 | 7 | Betula pendula | European White Birch | 19.3 | 14.49037 |

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| N734_06 | 8 | Betula pendula | European White Birch | 23.6 | 23.9607 |
| N734_06 | 9 | Betula pendula | European White Birch | 16.6 | 9.941037 |
| N734_06 | 10 | Betula pendula | European White Birch | 17.7 | 11.67092 |
| N734_06 | 11 | Betula pendula | European White Birch | 17 | 10.55086 |
| N734_06 | 12 | Betula pendula | European White Birch | 8.4 | 1.810286 |
| N734_06 | 13 | Betula pendula | European White Birch | 22.4 | 21.0296 |
| N734_06 | 14 | Betula pendula | European White Birch | 21.7 | 19.42473 |
| N734_06 | 15 | Betula pendula | European White Birch | 13.2 | 5.604779 |
| N734_06 | 16 | Betula pendula | European White Birch | 13 | 5.394852 |
| N734_06 | 17 | Betula pendula | European White Birch | 18 | 12.17184 |
| N734_06 | 18 | Betula pendula | European White Birch | 21.1 | 18.10953 |
| N734_06 | 19 | Betula pendula | European White Birch | 9.4 | 2.39821 |
| N734_06 | 20 | Betula pendula | European White Birch | 11.6 | 4.057395 |
| N734_06 | 21 | Betula pendula | European White Birch | 12.8 | 5.189715 |
| N734_06 | 22 | Betula pendula | European White Birch | 10.8 | 3.393516 |
| N734_06 | 23 | Betula pendula | European White Birch | 14.7 | 7.335585 |
| N734_06 | 24 | Betula pendula | European White Birch | 19.9 | 15.64315 |
| N734_06 | 25 | Betula pendula | European White Birch | 18.1 | 12.34162 |
| N734_06 | 26 | Betula pendula | European White Birch | 18.3 | 12.68543 |
| N734_06 | 27 | Betula pendula | European White Birch | 19.3 | 14.49037 |
| N734_06 | 28 | Betula pendula | European White Birch | 8.5 | 1.864654 |
| N734_06 | 29 | Betula pendula | European White Birch | 9.9 | 2.73001 |
| N734_06 | 30 | Betula pendula | European White Birch | 10.9 | 3.472628 |
| N734_06 | 31 | Betula pendula | European White Birch | 16.2 | 9.352872 |
| N734_06 | 32 | Betula pendula | European White Birch | 14.7 | 7.335585 |
| N734_06 | 33 | Betula pendula | European White Birch | 12.4 | 4.793664 |
| N734_06 | 34 | Betula pendula | European White Birch | 13.5 | 5.928732 |
| N734_06 | 35 | Betula pendula | European White Birch | 14.8 | 7.460996 |
| N734_06 | 36 | Betula pendula | European White Birch | 25.2 | 28.23135 |
| N734_06 | 37 | Betula pendula | European White Birch | 21.5 | 18.98018 |
| N734_06 | 38 | Betula pendula | European White Birch | 29.7 | 42.57441 |
| N734_06 | 39 | Betula pendula | European White Birch | 17.9 | 12.00346 |
| N734_06 | 40 | Betula pendula | European White Birch | 22.4 | 21.0296 |
| N734_06 | 41 | Betula pendula | European White Birch | 22.5 | 21.26513 |
| N734_06 | 42 | Betula pendula | European White Birch | 22.4 | 21.0296 |
| N734_06 | 43 | Betula pendula | European White Birch | 27 | 33.54681 |
| N734_06 | 44 | Betula pendula | European White Birch | 17.5 | 11.34398 |
| N734_06 | 45 | Betula pendula | European White Birch | 19.8 | 15.44733 |
| N734_06 | 46 | Betula pendula | European White Birch | 13.9 | 6.377775 |
| N734_06 | 47 | Betula pendula | European White Birch | 25.5 | 29.07922 |
| N734_06 | 48 | Betula pendula | European White Birch | 13.5 | 5.928732 |

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| N734_06 | 49 | Betula pendula | European White Birch | 17.7 | 11.67092 |
| N734_06 | 50 | Betula pendula | European White Birch | 20.6 | 17.05553 |
| N734_06 | 51 | Betula pendula | European White Birch | 34.1 | 60.14039 |
| N734_06 | 52 | Quercus rubra | American Oak | 39.3 | 320.3604 |
| N734_06 | 53 | Quercus rubra | American Oak | 24.9 | 120.6439 |
| N734_10 | 1 | Betula pendula | European White Birch | 27.2 | 34.17159 |
| N734_10 | 2 | Betula pendula | European White Birch | 22.5 | 21.26513 |
| N734_10 | 4 | Quercus rubra | American Oak | 17.9 | 59.53115 |
| N734_10 | 5 | Quercus rubra | American Oak | 14.9 | 40.2029 |
| N734_10 | 6 | Quercus rubra | American Oak | 11.4 | 22.6681 |
| N734_10 | 7 | Quercus rubra | American Oak | 16.7 | 51.31591 |
| N734_10 | 8 | Quercus rubra | American Oak | 18.1 | 60.96365 |
| N734_10 | 9 | Quercus rubra | American Oak | 22 | 92.55999 |
| N734_10 | 10 | Quercus rubra | American Oak | 24.3 | 114.5081 |
| N734_10 | 11 | Quercus rubra | American Oak | 18.4 | 63.14645 |
| N734_10 | 12 | Quercus rubra | American Oak | 11.5 | 23.09575 |
| N734_10 | 13 | Quercus rubra | American Oak | 12.7 | 28.56135 |
| N734_10 | 14 | Quercus rubra | American Oak | 16.3 | 48.72146 |
| N734_10 | 15 | Quercus rubra | American Oak | 11.3 | 22.2447 |
| N734_10 | 16 | Quercus rubra | American Oak | 9.6 | 15.69276 |
| N734_10 | 17 | Quercus rubra | American Oak | 15.2 | 41.95503 |
| N734_10 | 18 | Quercus rubra | American Oak | 15.2 | 41.95503 |
| N734_10 | 19 | Quercus rubra | American Oak | 18.2 | 61.6867 |
| N734_10 | 20 | Quercus rubra | American Oak | 22.4 | 96.19877 |
| N734_10 | 21 | Quercus rubra | American Oak | 18.7 | 65.3702 |
| N734_10 | 22 | Quercus rubra | American Oak | 11.2 | 21.82556 |
| N734_10 | 23 | Quercus rubra | American Oak | 13.2 | 31.0218 |
| N734_10 | 24 | Quercus rubra | American Oak | 20.3 | 77.92563 |
| N734_10 | 25 | Quercus rubra | American Oak | 17.8 | 58.8217 |
| N734_10 | 26 | Quercus rubra | American Oak | 12.5 | 27.60744 |
| N734_10 | 27 | Quercus rubra | American Oak | 20.9 | 82.93767 |
| N734_11 | 1 | Quercus rubra | American Oak | 13.4 | 32.03635 |
| N734_11 | 2 | Quercus rubra | American Oak | 19.8 | 73.87582 |
| N734_11 | 3 | Quercus rubra | American Oak | 32.2 | 209.1464 |
| N734_11 | 4 | Quercus rubra | American Oak | 43.1 | 390.3194 |
| N734_11 | 5 | Quercus rubra | American Oak | 51 | 559.5501 |
| N734_11 | 6 | Quercus rubra | American Oak | 36.9 | 279.9466 |
| N734_11 | 7 | Quercus rubra | American Oak | 42.1 | 371.1953 |
| N734_11 | 8 | Quercus rubra | American Oak | 38.2 | 301.4771 |
| N734_11 | 9 | Quercus rubra | American Oak | 47.7 | 484.9178 |
| N734_11 | 10 | Quercus rubra | American Oak | 50.3 | 543.2432 |

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|---|---|---|---|---|---|
| N734_11 | 11 | Quercus rubra | American Oak | 47.2 | 474.1051 |
| N734_11 | 12 | Quercus rubra | American Oak | 59.5 | 778.2248 |
| N734_11 | 13 | Quercus rubra | American Oak | 49.5 | 524.9209 |
| N734_11 | 14 | Quercus rubra | American Oak | 49 | 513.6395 |
| N734_13 | 1 | Betula pendula | European White Birch | 25.7 | 29.65285 |
| N734_13 | 2 | Betula pendula | European White Birch | 24.7 | 26.85156 |
| N734_13 | 3 | Betula pendula | European White Birch | 22.6 | 21.50223 |
| N734_13 | 4 | Betula pendula | European White Birch | 23.3 | 23.20637 |
| N734_13 | 5 | Betula pendula | European White Birch | 22 | 20.10318 |
| N734_13 | 6 | Betula pendula | European White Birch | 20.4 | 16.64451 |
| N734_13 | 7 | Betula pendula | European White Birch | 14.5 | 7.088579 |
| N734_13 | 8 | Betula pendula | European White Birch | 13.8 | 6.263668 |
| N734_13 | 9 | Betula pendula | European White Birch | 34 | 59.70038 |
| N734_13 | 10 | Quercus rubra | American Oak | 31.3 | 196.8356 |
| N734_13 | 11 | Quercus rubra | American Oak | 31.8 | 203.6258 |
| N734_13 | 12 | Quercus rubra | American Oak | 29 | 167.1747 |
| N734_13 | 13 | Quercus rubra | American Oak | 35.4 | 256.1567 |
| N734_13 | 14 | Quercus rubra | American Oak | 13.9 | 34.64898 |
| N734_13 | 15 | Quercus rubra | American Oak | 28.9 | 165.9435 |
| N734_13 | 16 | Quercus rubra | American Oak | 22 | 92.55999 |
| N734_13 | 17 | Quercus rubra | American Oak | 36.1 | 267.1186 |
| N734_13 | 18 | Quercus rubra | American Oak | 28 | 155.0804 |
| N734_13 | 19 | Quercus rubra | American Oak | 37 | 281.5726 |
| N734_13 | 20 | Quercus rubra | American Oak | 23.5 | 106.5919 |
| N734_13 | 21 | Quercus rubra | American Oak | 26.4 | 136.7323 |
| N734_13 | 22 | Quercus rubra | American Oak | 35.8 | 262.3907 |
| N734_13 | 23 | Quercus rubra | American Oak | 32.8 | 217.5749 |
| N734_13 | 24 | Quercus rubra | American Oak | 37.8 | 294.7618 |
| N734_13 | 25 | Quercus rubra | American Oak | 29.2 | 169.6516 |
| N734_13 | 26 | Quercus rubra | American Oak | 33.1 | 221.8557 |
| N734_13 | 27 | Quercus rubra | American Oak | 31 | 192.8203 |
| N734_13 | 28 | Quercus rubra | American Oak | 39.5 | 323.8594 |
| N734_13 | 29 | Quercus rubra | American Oak | 29.9 | 178.4741 |
| N734_13 | 30 | Quercus rubra | American Oak | 51.8 | 578.5015 |
| N734_13 | 31 | Quercus rubra | American Oak | 43.8 | 404.0112 |
| N734_13 | 32 | Quercus rubra | American Oak | 43.9 | 405.9877 |
| N734_13 | 33 | Quercus rubra | American Oak | 38.1 | 299.7907 |
| N734_13 | 34 | Quercus rubra | American Oak | 39.5 | 323.8594 |
| N735_01 | 1 | Quercus robur | English Oak | 35 | 250.0025 |
| N735_01 | 2 | Quercus robur | English Oak | 32.7 | 216.1578 |
| N735_01 | 3 | Quercus robur | English Oak | 34.1 | 236.4466 |

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|---|---|---|---|---|---|
| N735_01 | 4 | Quercus robur | English Oak | 39.1 | 316.8816 |
| N735_01 | 5 | Quercus robur | English Oak | 38.8 | 311.7013 |
| N735_01 | 6 | Quercus robur | English Oak | 19.3 | 69.94093 |
| N735_01 | 7 | Quercus robur | English Oak | 43.6 | 400.0736 |
| N735_01 | 8 | Quercus robur | English Oak | 40.5 | 341.6587 |
| N735_01 | 9 | Quercus robur | English Oak | 33.9 | 233.4888 |
| N735_01 | 10 | Quercus robur | English Oak | 18.4 | 63.14645 |
| N735_01 | 11 | Quercus robur | English Oak | 33.1 | 221.8557 |
| N735_01 | 12 | Quercus robur | English Oak | 28.1 | 156.2681 |
| N735_01 | 13 | Quercus robur | English Oak | 28.2 | 157.4606 |
| N735_01 | 14 | Quercus robur | English Oak | 27.8 | 152.7196 |
| N735_01 | 15 | Quercus robur | English Oak | 38.6 | 308.2731 |
| N735_01 | 16 | Quercus robur | English Oak | 26 | 132.3371 |
| N735_01 | 17 | Quercus robur | English Oak | 28.3 | 158.6579 |
| N735_01 | 18 | Quercus robur | English Oak | 29 | 167.1747 |
| N735_02 | 1 | Quercus robur | English Oak | 67.3 | 1012.957 |
| N735_02 | 2 | Quercus robur | English Oak | 71.3 | 1146.174 |
| N735_02 | 3 | Quercus robur | English Oak | 69.8 | 1095.19 |
| N735_02 | 4 | Quercus robur | English Oak | 46.6 | 461.3013 |
| N735_02 | 5 | Quercus robur | English Oak | 70.9 | 1132.457 |
| N735_02 | 6 | Quercus robur | English Oak | 40.8 | 347.0975 |
| N735_02 | 7 | Quercus robur | English Oak | 61.6 | 838.1881 |
| N735_02 | 8 | Quercus robur | English Oak | 58.7 | 756.0044 |
| N735_02 | 9 | Quercus robur | English Oak | 67.9 | 1032.381 |
| N735_02 | 10 | Quercus robur | English Oak | 52.9 | 605.1094 |
| N735_02 | 11 | Quercus robur | English Oak | 51.2 | 564.2564 |
| N735_02 | 12 | Quercus robur | English Oak | 60.7 | 812.1992 |
| N735_02 | 13 | Quercus robur | English Oak | 61.2 | 826.5837 |
| N735_02 | 14 | Quercus robur | English Oak | 47.9 | 489.2792 |
| N735_02 | 15 | Quercus robur | English Oak | 71.6 | 1156.519 |
| N735_02 | 16 | Quercus robur | English Oak | 56.2 | 688.7704 |
| N735_02 | 17 | Quercus robur | English Oak | 59.3 | 772.6376 |
| N735_02 | 18 | Quercus robur | English Oak | 59.2 | 769.852 |
| N735_02 | 19 | Quercus robur | English Oak | 57.2 | 715.2639 |
| N735_02 | 20 | Quercus robur | English Oak | 55.1 | 660.2421 |
| N735_02 | 21 | Quercus robur | English Oak | 57.7 | 728.7105 |
| N735_02 | 22 | Quercus robur | English Oak | 64.6 | 927.9752 |
| N735_02 | 23 | Quercus robur | English Oak | 59.8 | 786.646 |
| N739_04 | 1 | Fagus sylvatica | European Beech | 65.6 | 1188.305 |
| N739_04 | 2 | Fagus sylvatica | European Beech | 15.9 | 29.78481 |
| N739_04 | 3 | Fagus sylvatica | European Beech | 14.6 | 23.85848 |

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|---|---|---|---|---|---|
| N739_04 | 4 | Fagus sylvatica | European Beech | 13.2 | 18.35582 |
| N739_04 | 5 | Fagus sylvatica | European Beech | 15.9 | 29.78481 |
| N739_04 | 6 | Fagus sylvatica | European Beech | 31.9 | 182.1883 |
| N739_04 | 7 | Fagus sylvatica | European Beech | 47.7 | 518.7848 |
| N739_04 | 8 | Betula pendula | European White Birch | 46.3 | 129.2062 |
| N739_04 | 9 | Betula pendula | European White Birch | 45.5 | 123.6962 |
| N739_04 | 10 | Betula pendula | European White Birch | 46.2 | 128.5095 |
| N739_04 | 11 | Betula pendula | European White Birch | 40.8 | 94.18035 |
| N739_04 | 12 | Betula pendula | European White Birch | 33.4 | 57.10091 |
| N739_04 | 13 | Betula pendula | European White Birch | 40.5 | 92.45837 |
| N739_04 | 14 | Betula pendula | European White Birch | 32.6 | 53.74238 |
| N739_04 | 15 | Betula pendula | European White Birch | 29.6 | 42.21689 |
| N739_04 | 16 | Betula pendula | European White Birch | 26.5 | 32.01499 |
| N739_04 | 17 | Betula pendula | European White Birch | 27.8 | 36.08765 |
| N739_04 | 18 | Betula pendula | European White Birch | 29 | 40.10962 |
| N739_04 | 19 | Betula pendula | European White Birch | 36.1 | 69.35179 |
| N739_04 | 20 | Betula pendula | European White Birch | 20.3 | 16.44125 |
| N739_04 | 21 | Betula pendula | European White Birch | 17.8 | 11.83649 |
| N739_04 | 22 | Betula pendula | European White Birch | 21.6 | 19.20168 |
| N739_04 | 23 | Pseudotsuga_menzoiesii | Douglas Fir | 39.9 | 176.8893 |
| N739_04 | 24 | Quercus robur | English Oak | 58.1 | 739.5639 |
| N739_04 | 25 | Quercus robur | English Oak | 32.7 | 216.1578 |
| N739_04 | 26 | Quercus robur | English Oak | 59 | 764.2969 |
| N739_04 | 27 | Quercus robur | English Oak | 29.8 | 177.1991 |
| N739_04 | 28 | Quercus robur | English Oak | 33.6 | 229.0893 |
| N739_04 | 29 | Quercus robur | English Oak | 30.6 | 187.5351 |
| N739_04 | 30 | Quercus robur | English Oak | 36.7 | 276.7096 |
| N739_04 | 31 | Quercus robur | English Oak | 35.2 | 253.0697 |
| N739_04 | 32 | Quercus robur | English Oak | 32.3 | 210.5388 |
| N739_04 | 33 | Quercus robur | English Oak | 35.2 | 253.0697 |
| N739_04 | 34 | Quercus robur | English Oak | 32.5 | 213.3385 |
| N739_04 | 35 | Quercus robur | English Oak | 54.5 | 644.9519 |
| N739_04 | 36 | Quercus robur | English Oak | 37.4 | 288.127 |
| N739_04 | 37 | Quercus robur | English Oak | 52.8 | 602.6642 |
| N739_04 | 38 | Quercus robur | English Oak | 49 | 513.6395 |
| N739_04 | 39 | Quercus robur | English Oak | 53.2 | 612.4768 |
| N739_04 | 40 | Quercus robur | English Oak | 35.5 | 257.7077 |
| N739_04 | 41 | Quercus robur | English Oak | 36.7 | 276.7096 |
| N739_04 | 42 | Quercus robur | English Oak | 37 | 281.5726 |
| N739_04 | 43 | Quercus robur | English Oak | 36.6 | 275.0985 |
| N739_04 | 44 | Quercus robur | English Oak | 34.3 | 239.4243 |

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|---|---|---|---|---|---|
| N739_04 | 45 | Quercus robur | English Oak | 39.2 | 318.6185 |
| N739_04 | 46 | Quercus robur | English Oak | 43 | 388.3839 |
| N739_04 | 47 | Quercus robur | English Oak | 48.6 | 504.7082 |
| N739_04 | 48 | Quercus robur | English Oak | 36.8 | 278.3256 |
| N739_04 | 49 | Quercus robur | English Oak | 40.6 | 343.4666 |
| N739_04 | 50 | Quercus robur | English Oak | 45.3 | 434.1991 |
| N739_04 | 51 | Quercus robur | English Oak | 39.3 | 320.3604 |
| N739_04 | 52 | Quercus robur | English Oak | 43.9 | 405.9877 |
| N739_04 | 53 | Quercus robur | English Oak | 38.7 | 309.9847 |
| N739_04 | 54 | Quercus robur | English Oak | 53.9 | 629.8523 |
| N739_04 | 55 | Pinus sylvestris | Scots Pine | 47.2 | 204.3945 |
| N739_05 | 1 | Quercus robur | English Oak | 35.6 | 259.2637 |
| N739_05 | 2 | Quercus robur | English Oak | 28.3 | 158.6579 |
| N739_05 | 3 | Quercus robur | English Oak | 38 | 298.1094 |
| N739_05 | 4 | Quercus robur | English Oak | 34 | 234.9653 |
| N739_05 | 5 | Quercus robur | English Oak | 36 | 265.5377 |
| N739_05 | 6 | Quercus robur | English Oak | 34.9 | 248.4764 |
| N739_05 | 7 | Quercus robur | English Oak | 33.9 | 233.4888 |
| N739_05 | 8 | Quercus robur | English Oak | 29.4 | 172.148 |
| N739_05 | 9 | Quercus robur | English Oak | 33.2 | 223.2926 |
| N739_05 | 10 | Quercus robur | English Oak | 14 | 35.18461 |
| N739_05 | 11 | Quercus robur | English Oak | 30.1 | 181.0386 |
| N739_05 | 12 | Quercus robur | English Oak | 11.4 | 22.6681 |
| N739_05 | 13 | Quercus robur | English Oak | 12.8 | 29.04478 |
| N739_05 | 14 | Quercus robur | English Oak | 27.9 | 153.8976 |
| N739_05 | 15 | Quercus robur | English Oak | 10.4 | 18.62474 |
| N739_05 | 16 | Quercus robur | English Oak | 11.9 | 24.84902 |
| N739_05 | 17 | Quercus robur | English Oak | 28.2 | 157.4606 |
| N739_05 | 18 | Quercus robur | English Oak | 8 | 10.6231 |
| N739_05 | 19 | Quercus robur | English Oak | 26.8 | 141.2041 |
| N739_05 | 20 | Quercus robur | English Oak | 35.2 | 253.0697 |
| N739_05 | 21 | Quercus robur | English Oak | 39.5 | 323.8594 |
| N739_05 | 22 | Quercus robur | English Oak | 43.8 | 404.0112 |

## Appendix 2: Location of sample plots w/ calculated biomass and carbon stock

| Plot ID | X1 | Y1 | Radius (m) | Length (m) | Width (m) | Area ($m^2$) | Class | Carbon (kg) | Carbon stock per plot ($kg/m^2$) | Carbon stock scaled up (tons/Ha) |
|---|---|---|---|---|---|---|---|---|---|---|
| A1_03 | 263591.25 | 480911.23 | NA | 10 | 10 | 100 | 5 | 72.34 | 0.72 | 7.2 |
| A1_04 | 266387.79 | 481572.64 | NA | 10 | 5 | 50 | 5 | 294.84 | 5.90 | 59.0 |
| A1_05 | 268059.16 | 482199.63 | 12.6 | NA | NA | 500 | 5 | 1638.81 | 3.28 | 32.8 |
| A1_06 | 264406.90 | 481255.79 | 5 | NA | NA | 79 | 5 | 252.55 | 3.20 | 32.0 |
| A1_08 | 261695.57 | 479463.44 | NA | 20 | 5 | 100 | 5 | 341.01 | 3.41 | 34.1 |
| A1_09 | 260789.93 | 479030.33 | NA | 20 | 5 | 100 | 5 | 846.28 | 8.46 | 84.6 |
| A1_10 | 259926.93 | 479007.43 | NA | 10 | 10 | 100 | 5 | 97.32 | 0.97 | 9.7 |
| A1_12 | 256372.20 | 479300.51 | 8.96 | NA | NA | 250 | 5 | 835.36 | 3.34 | 33.4 |
| A1_13 | 255901.21 | 478849.41 | NA | 15 | 4 | 60 | 5 | 252.52 | 4.21 | 42.1 |
| A1_14 | 255218.07 | 478183.65 | NA | 10 | 10 | 100 | 5 | 566.57 | 5.67 | 56.7 |
| A1_15 | 251914.81 | 478140.24 | NA | 20 | 10 | 200 | 2 | 854.00 | 4.27 | 42.7 |
| A1_16 | 251343.71 | 478570.11 | NA | 20 | 10 | 200 | 2 | 683.62 | 3.42 | 34.2 |
| A1_17 | 250641.32 | 478741.92 | NA | 40 | 10 | 400 | 2 | 1377.52 | 3.44 | 34.4 |
| A1_20 | 249479.76 | 478687.94 | 8.96 | NA | NA | 250 | 5 | 665.00 | 2.66 | 26.6 |
| A35_01 | 247743.94 | 477735.71 | NA | 20 | 5 | 100 | 5 | 837.28 | 8.37 | 83.7 |
| A35_02 | 248114.31 | 476261.46 | 8.96 | NA | NA | 250 | 4 | 3054.89 | 12.22 | 122.2 |
| A35_03_1 | 248029.34 | 475930.26 | 8.96 | NA | NA | 250 | 5 | 211.77 | 0.85 | 8.5 |
| A35_04 | 249002.22 | 473024.17 | 8.96 | NA | NA | 250 | 3 | 1748.40 | 6.99 | 69.9 |
| A35_04_1 | 250838.36 | 471814.40 | NA | 10 | 20 | 200 | 5 | 1144.26 | 5.72 | 57.2 |
| A35_05 | 248370.23 | 474273.68 | NA | 10 | 20 | 200 | 5 | 1407.25 | 7.04 | 70.4 |
| A35_08 | 249329.77 | 472727.29 | NA | 100 | 15 | 1500 | 2 | 1834.07 | 1.22 | 12.2 |
| A35_09 | 252409.67 | 470038.65 | 8.96 | NA | NA | 250 | 5 | 1109.96 | 4.44 | 44.4 |
| L560_01_1 | 259016.20 | 467433.95 | NA | 200 | 2 | 400 | 2 | 3027.29 | 8.05 | 80.5 |
| L560_01_4 | 259266.20 | 467086.83 | NA | 80 | 2 | 160 | 2 | 405.45 | 2.52 | 25.2 |
| L560_04_1 | 259334.75 | 466995.99 | NA | 60 | 2 | 120 | 2 | 384.08 | 3.15 | 31.5 |
| L560_04_2 | 259271.88 | 467072.96 | NA | 120 | 2 | 240 | 2 | 1213.08 | 4.99 | 49.9 |
| N18_01 | 255101.20 | 469588.94 | NA | 120 | 2 | 240 | 3 | 5363.02 | 22.72 | 227.2 |
| N18_03 | 253475.87 | 468378.13 | NA | 90 | 2 | 180 | 3 | 4581.18 | 23.99 | 239.9 |
| N18_04 | 253037.35 | 467921.95 | NA | 110 | 2 | 220 | 3 | 4881.69 | 21.99 | 219.9 |
| N18_05 | 252426.60 | 467437.68 | NA | 100 | 2 | 200 | 3 | 4204.73 | 22.49 | 224.9 |
| N18_08 | 250029.19 | 465641.50 | NA | 90 | 2 | 180 | 3 | 4091.05 | 22.60 | 226.0 |

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|---|---|---|---|---|---|---|---|---|---|---|
| N18_10 | 244737.36 | 462880.55 | NA | 90 | 2 | 180 | 3 | 5022.46 | 27.15 | 271.5 |
| N18_11 | 243102.74 | 460783.97 | NA | 90 | 2 | 180 | 3 | 4265.76 | 22.93 | 229.3 |
| N18_13 | 243871.25 | 461658.69 | NA | 75 | 4 | 300 | 3 | 7129.29 | 23.76 | 237.6 |
| N18_15 | 249755.88 | 465405.33 | NA | 85 | 2 | 170 | 3 | 3962.46 | 23.59 | 235.9 |
| N315_01 | 243220.95 | 461456.34 | NA | 85 | 2 | 170 | 3 | 4145.83 | 24.39 | 243.9 |
| N342_01 | 266001.97 | 489995.84 | NA | 45 | 2 | 90 | 3 | 780.63 | 8.39 | 83.9 |
| N342_02 | 266881.94 | 491451.63 | NA | 110 | 2 | 220 | 2 | 2082.71 | 9.64 | 96.4 |
| N342_03 | 266829.04 | 491357.47 | NA | 355 | 2 | 710 | 2 | 1869.17 | 2.64 | 26.4 |
| N342_05_1 | 266390.24 | 490639.10 | NA | 15 | 4 | 60 | 4 | 495.61 | 8.26 | 82.6 |
| N342_06 | 264206.63 | 487321.45 | NA | 135 | 2 | 270 | 4 | 3785.72 | 13.97 | 139.7 |
| N342_09 | 262936.65 | 485577.73 | NA | 100 | 2 | 200 | 3 | 2990.93 | 14.95 | 149.5 |
| N342_11_1 | 262478.41 | 484936.78 | NA | 145 | 2 | 290 | 4 | 2261.87 | 7.80 | 78.0 |
| N342_12 | 262393.77 | 484791.53 | NA | 100 | 2 | 200 | 4 | 4521.06 | 22.60 | 226.0 |
| N342_15 | 257886.42 | 480143.68 | NA | 70 | 2 | 140 | 2 | 68.32 | 0.48 | 4.8 |
| N342_16 | 257667.59 | 479871.21 | NA | 70 | 2 | 140 | 2 | 591.36 | 4.11 | 41.1 |
| N343_01 | 254288.36 | 486767.90 | NA | 30 | 25 | 750 | 5 | 1877.87 | 2.50 | 25.0 |
| N343_02 | 255923.88 | 484664.78 | NA | 150 | 3 | 450 | 3 | 8948.68 | 19.89 | 198.9 |
| N343_03 | 258058.60 | 483924.88 | NA | NA | NA | 80 | 4 | 1586.59 | 19.83 | 198.3 |
| N347_02 | 243602.38 | 466903.89 | NA | 95 | 2 | 190 | 2 | 760.49 | 4.05 | 40.5 |
| N347_03 | 242713.24 | 467215.84 | NA | 90 | 2 | 180 | 2 | 489.36 | 2.72 | 27.2 |
| N349_02_1 | 264176.18 | 489196.43 | NA | 80 | 2 | 160 | 3 | 2194.50 | 13.46 | 134.6 |
| N349_02_2 | 264165.00 | 489212.19 | NA | 80 | 2 | 160 | 2 | 172.14 | 1.09 | 10.9 |
| N349_03 | 264098.50 | 489254.72 | NA | 150 | 3 | 450 | 3 | 9556.06 | 21.24 | 212.4 |
| N349_03_1 | 264026.74 | 489288.52 | NA | 20 | 4 | 80 | 3 | 683.54 | 8.54 | 85.4 |
| N349_04 | 263761.77 | 489638.93 | NA | 35 | 2 | 70 | 1 | 896.72 | 12.63 | 126.3 |
| N349_07 | 262869.63 | 490510.82 | NA | 180 | 2 | 360 | 3 | 9481.52 | 26.34 | 263.4 |
| N349_09 | 261866.89 | 491158.74 | NA | NA | NA | 500 | 3 | 5702.66 | 11.41 | 114.1 |
| N349_11 | 260528.15 | 492147.80 | NA | 175 | 3 | 525 | 3 | 14823.58 | 28.24 | 282.4 |
| N349_13 | 255589.40 | 491702.85 | NA | 110 | 3 | 330 | 3 | 9100.58 | 27.58 | 275.8 |
| N349_14 | 255567.36 | 491665.58 | NA | 100 | 4 | 400 | 3 | 7984.98 | 19.96 | 199.6 |
| N731_01 | 267087.64 | 474361.62 | NA | 10 | 20 | 200 | 2 | 722.41 | 3.61 | 36.1 |
| N731_02 | 267056.99 | 474421.49 | NA | 310 | 4 | 1240 | 3 | 27690.75 | 22.28 | 222.8 |
| N731_03 | 266912.09 | 474662.11 | NA | 100 | 4 | 400 | 3 | 9113.71 | 22.78 | 227.8 |
| N731_05 | 266691.43 | 474861.38 | NA | 80 | 2 | 157 | 3 | 2934.12 | 18.69 | 186.9 |
| N732_01 | 259605.64 | 473676.03 | NA | 30 | 2 | 60 | 5 | 279.65 | 4.24 | 42.4 |
| N732_03 | 260918.97 | 474655.63 | NA | 45 | 2 | 90 | 3 | 2558.48 | 27.51 | 275.1 |
| N732_05 | 261670.38 | 475102.46 | NA | 45 | 2 | 90 | 3 | 387.81 | 4.26 | 42.6 |

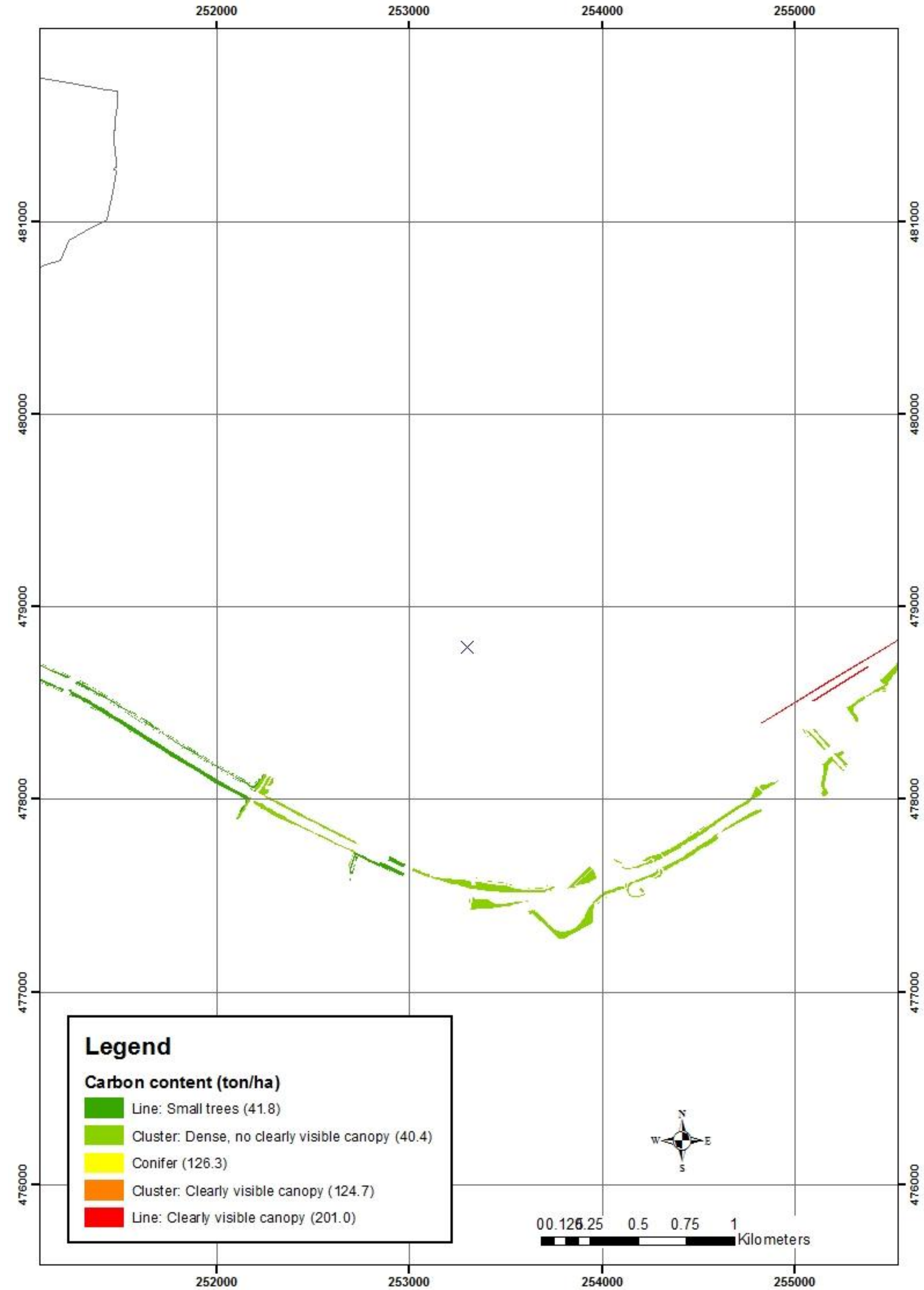
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| N732_06 | 263106.51 | 475633.90 | NA | 260 | 2 | 520 | 2 | 1264.38 | 2.41 | 24.1 |
| N732_09 | 263995.02 | 476058.70 | NA | 150 | 3 | 450 | 3 | 8717.12 | 19.37 | 193.7 |
| N732_11 | 260957.01 | 474681.21 | NA | 10 | 20 | 200 | 5 | 354.53 | 1.77 | 17.7 |
| N732_14 | 263697.76 | 476079.74 | NA | 135 | 2 | 270 | 2 | 911.36 | 3.41 | 34.1 |
| N732_17 | 259219.05 | 473303.47 | NA | 186 | 4 | 744 | 3 | 11898.96 | 15.99 | 159.9 |
| N732_P1 | 263710.40 | 476067.97 | NA | 40 | 4 | 160 | 3 | 1892.01 | 11.82 | 118.2 |
| N732_P2 | 263028.62 | 475546.14 | NA | 15 | 15 | 225 | 4 | 3911.85 | 17.39 | 173.9 |
| N733_03 | 259452.93 | 475246.37 | NA | 785 | 2 | 1570 | 3 | 42590.72 | 27.09 | 270.9 |
| N733_04 | 259865.82 | 476267.31 | NA | 330 | 2 | 660 | 3 | 16791.85 | 25.44 | 254.4 |
| N733_05 | 259954.07 | 476608.72 | NA | 200 | 4 | 800 | 3 | 21036.05 | 26.30 | 263.0 |
| N733_08 | 260239.81 | 477825.32 | NA | 240 | 4 | 960 | 4 | 9806.99 | 10.21 | 102.2 |
| N733_10 | 259437.98 | 475241.84 | NA | 710 | 2 | 1420 | 3 | 28916.37 | 20.39 | 203.9 |
| N734_01_1 | 264238.91 | 476939.90 | NA | 10 | 2 | 20 | 2 | 242.18 | 12.11 | 121.1 |
| N734_02 | 264209.35 | 476956.48 | NA | 65 | 2 | 130 | 2 | 314.50 | 2.50 | 25.0 |
| N734_03 | 264164.35 | 477000.72 | NA | 110 | 2 | 218 | 3 | 5319.42 | 24.40 | 244.0 |
| N734_04 | 264074.51 | 477081.19 | NA | 60 | 2 | 120 | 3 | 1886.60 | 15.46 | 154.6 |
| N734_06 | 263856.13 | 477244.45 | NA | 155 | 2 | 320 | 2 | 1117.22 | 3.57 | 35.7 |
| N734_10 | 263244.12 | 477790.34 | NA | 190 | 2 | 380 | 2 | 1305.95 | 3.43 | 34.3 |
| N734_11 | 263058.46 | 477940.03 | NA | 100 | 3 | 600 | 4 | 5536.60 | 9.23 | 92.3 |
| N734_13 | 261305.73 | 478872.08 | NA | 125 | 2 | 250 | 3 | 6148.59 | 24.59 | 245.9 |
| N735_01 | 264093.12 | 482281.47 | NA | 180 | 2 | 365 | 3 | 3894.25 | 10.67 | 106.7 |
| N735_02 | 262730.95 | 482530.86 | NA | 150 | 5 | 750 | 3 | 18325.79 | 24.43 | 244.3 |
| N739_04 | 246789.65 | 469232.92 | NA | NA | NA | 4563 | 4 | 14560.93 | 3.19 | 31.9 |
| N739_05 | 247219.36 | 468386.52 | NA | 140 | 3 | 420 | 2 | 3849.48 | 9.32 | 93.2 |

## Appendix 3: Dimensions of roadside vegetation areas

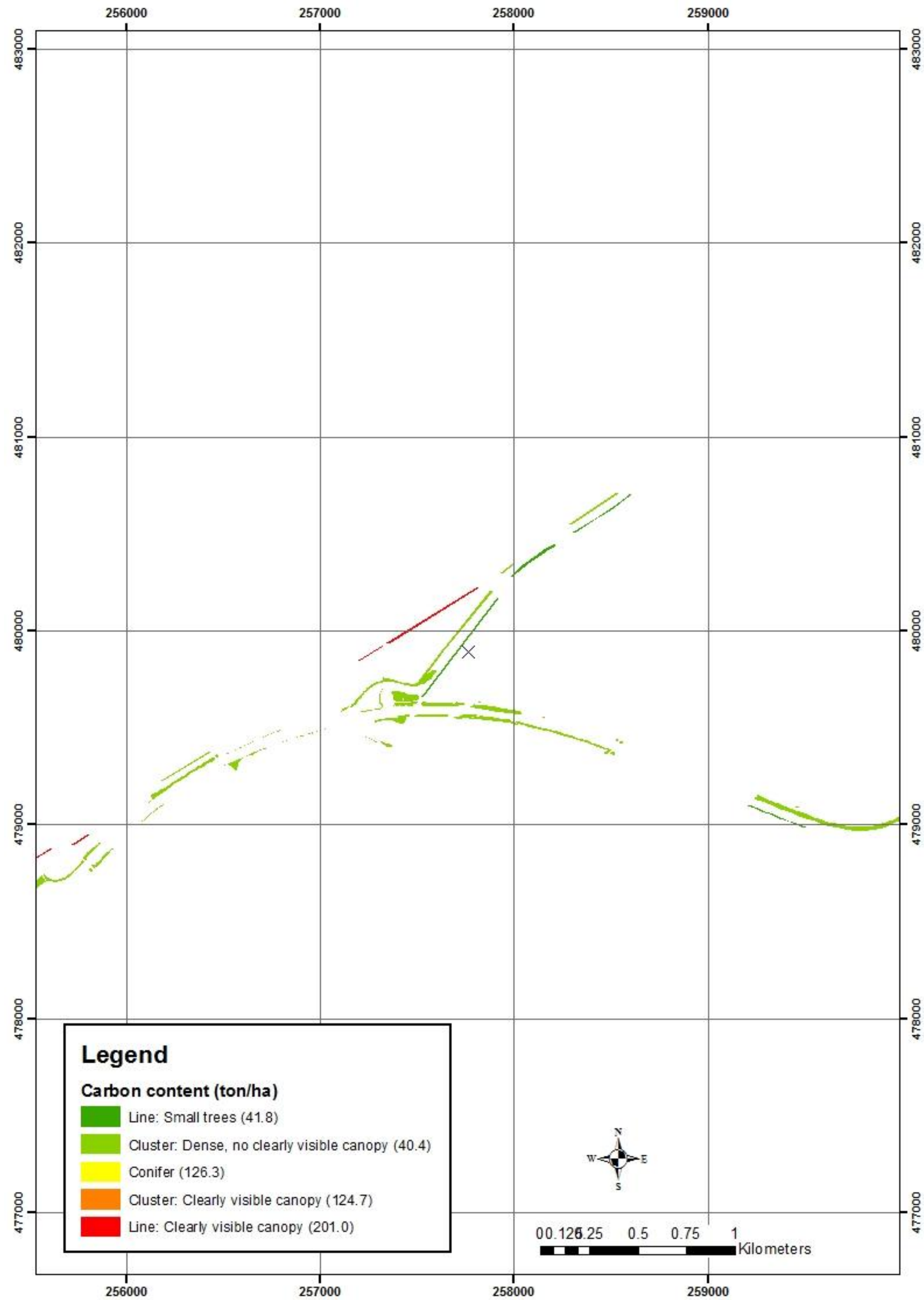
| Road Section | Side of road | Bike path present | Secondary road present | Road width (m) | Study area width closest to road (m) | Bike path or secondary road width (m) | Study area width further from road (m) |
|---|---|---|---|---|---|---|---|
| N739 | West | Yes | No | 4 | 2 | 2 | 2.5 |
| N739 | East | Yes | No | 4 | 2 | 2 | 2.5 |
| L560 | West | Yes | No | 4 | 1 | 2 | 2.5 |
| L560 | East | Yes | No | 4 | 1 | 2 | 2.5 |
| N315 | North | Yes | No | 4 | 2 | 2 | 2.5 |
| N315 | South | Yes | No | 4 | 2 | 2 | 2.5 |
| N347 | North | No | No | 4 | 4 | NA | NA |
| N347 | South | No | Yes | 4 | 4 | 5 | 2.5 |
| N342_North | West | Yes | No | 4 | 2 | NA | NA |
| N342_North | East | Yes | No | 4 | 2 | NA | NA |
| N342_Middle | West | No | Yes | 4 | 4 | 5 | 2.5 |
| N342_Middle | East | No | No | 4 | 4 | NA | NA |
| N342_South | West | Yes | No | 4 | 2 | 2 | 2.5 |
| N342_South | East | Yes | No | 4 | 2 | 2 | 2.5 |
| N343 | North | No | Yes | 4 | 4 | 5 | 2.5 |
| N343 | South | No | No | 4 | 4 | NA | NA |
| N349_West | North | Yes | No | 3.5 | 4 | 5 | 2.5 |
| N349_West | South | No | No | 3.5 | 4 | NA | NA |
| N349_East | North | Yes | No | 3.5 | 3 | 2 | 2.5 |
| N349_East | South | Yes | No | 3.5 | 3 | 2 | 2.5 |
| N735 | North | Yes | No | 4 | 2 | NA | NA |
| N735 | South | Yes | No | 4 | 2 | NA | NA |
| N734 | East | No | No | 4 | 4 | NA | NA |
| N734 | West | Yes | No | 4 | 4 | 4 | 2.5 |
| N733 | West | Yes | No | 4 | 2 | 2 | 2.5 |
| N733 | East | Yes | No | 4 | 2 | 2 | 2.5 |
| N732 | North | No | Yes | 4 | 4 | NA | NA |
| N732 | South | No | Yes | 4 | 5 | 5 | 2.5 |
| N731_North | West | No | No | 4 | 5 | NA | NA |
| N731_North | East | Yes | No | 4 | 4 | 4 | 2.5 |
| N731_South | West | No | No | 4 | 5 | NA | NA |
| N731_South | East | Yes | No | 4 | 10 | 4 | 2.5 |
| N18 | East | Yes | No | 4 | 2 | 2 | 2.5 |
| N18 | West | Yes | No | 4 | 2 | 2 | 2.5 |
| Heng | North | Yes | No | 6.5 | 2 | 2 | 2.5 |
| Heng | South | Yes | No | 6.5 | 2 | 2 | 2.5 |

## Appendix 4: Carbon map sheets

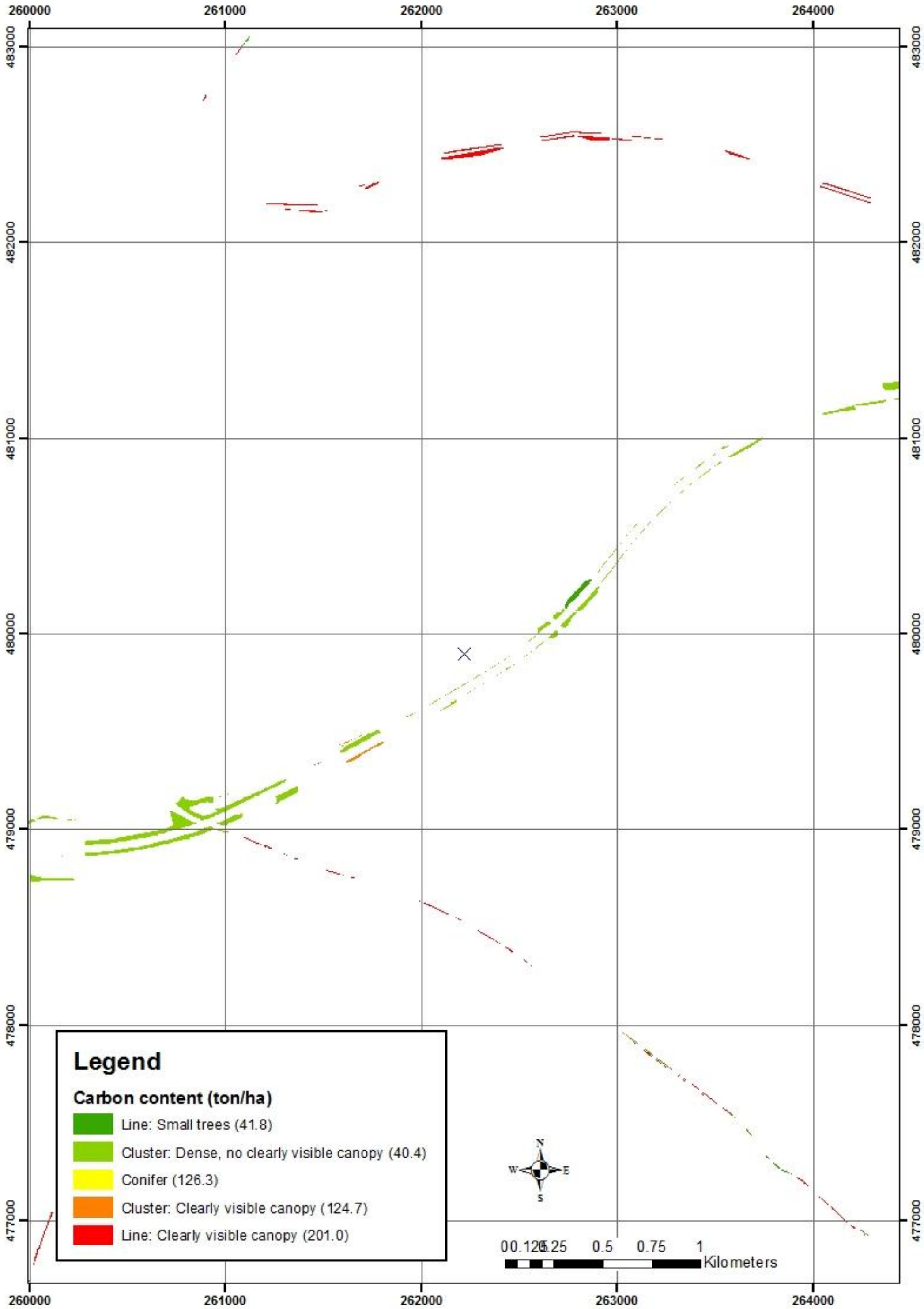
### Map sheet 2



**Map sheet 3**

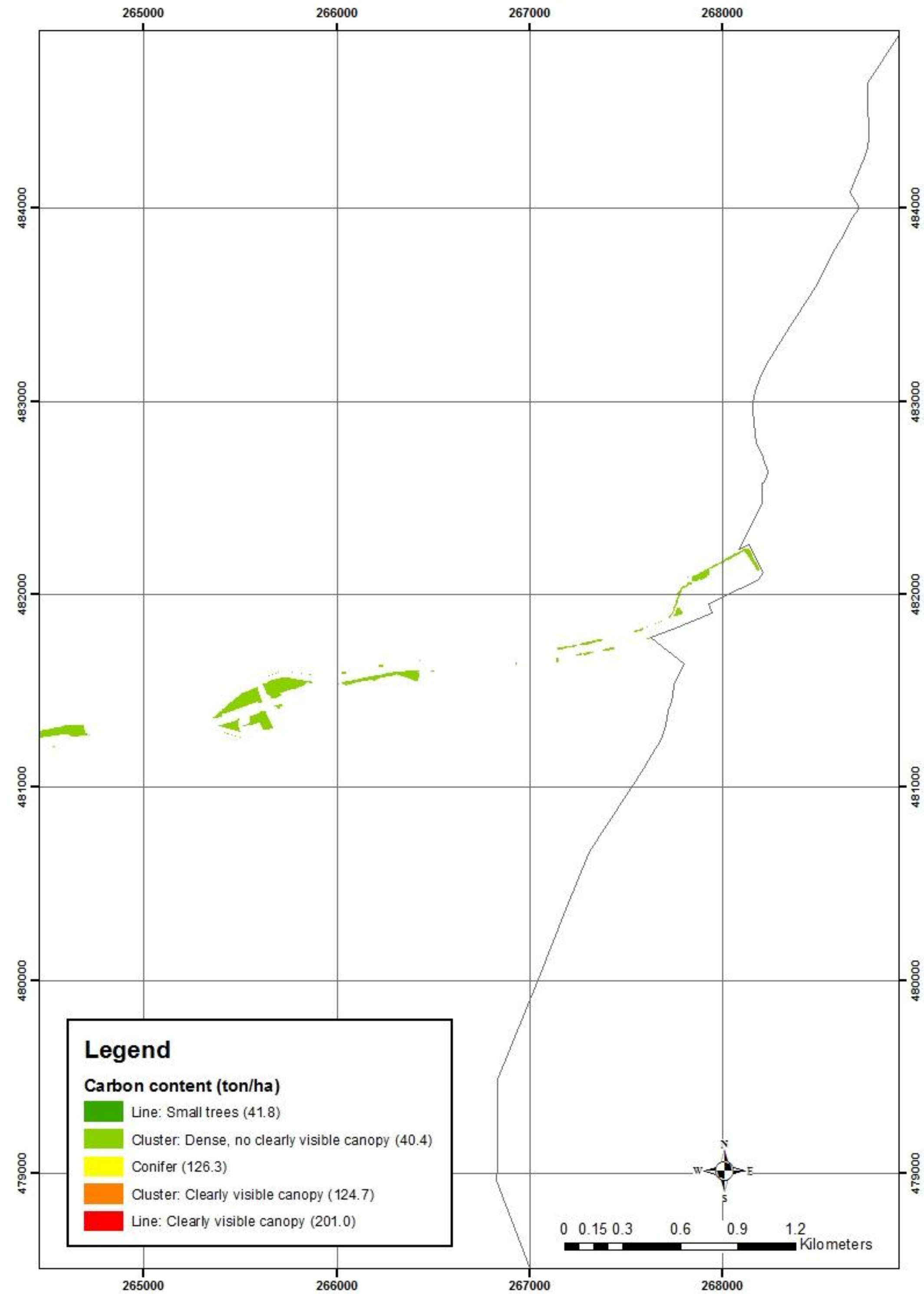

256000
257000
258000
259000
483000
482000
481000
480000
479000
478000
477000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.125 0.25 0.5 0.75 1
Kilometers

**Map sheet 4**

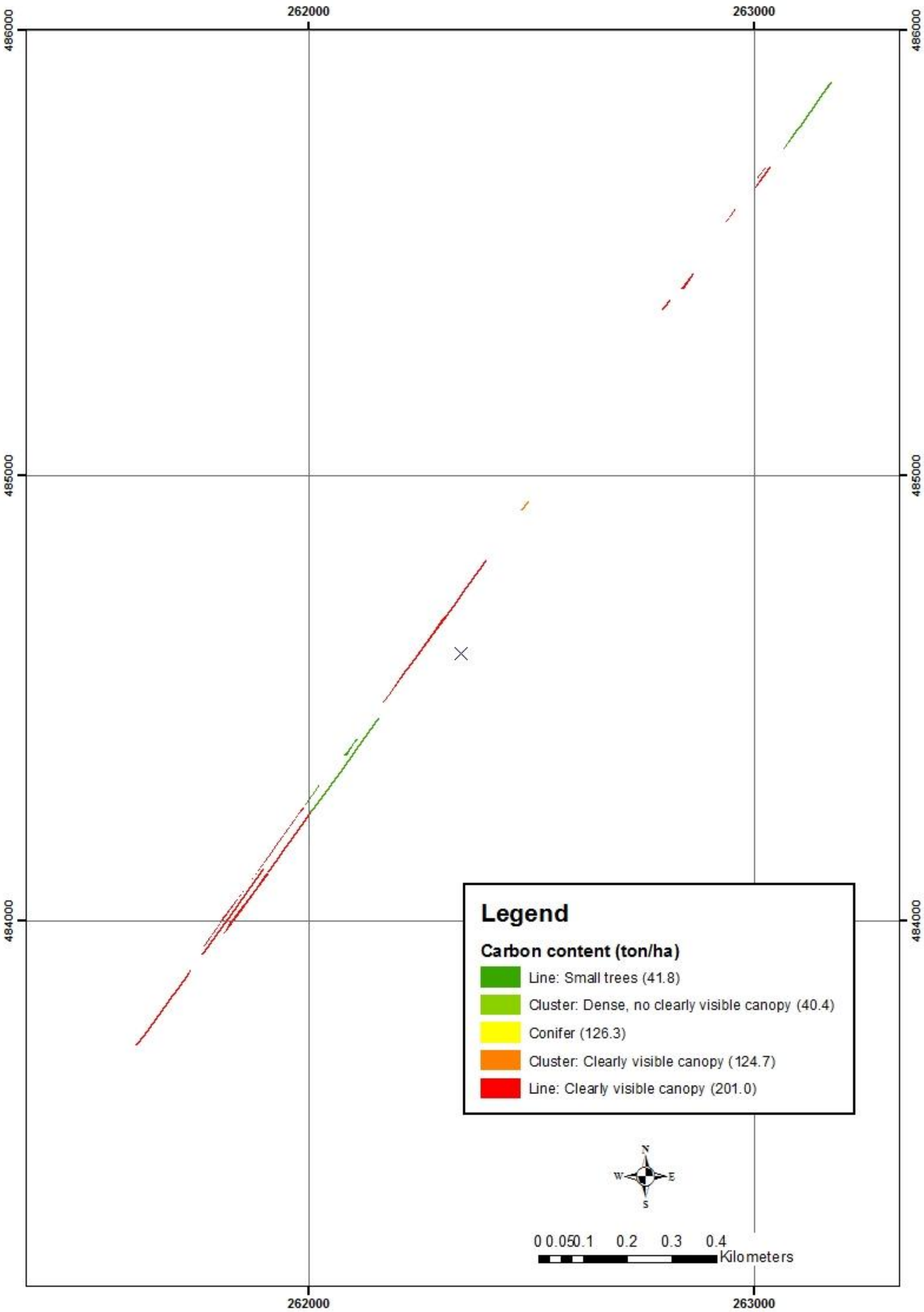


260000
261000
262000
263000
264000
483000
482000
481000
480000
479000
478000
477000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.125 0.25 0.5 0.75 1
Kilometers

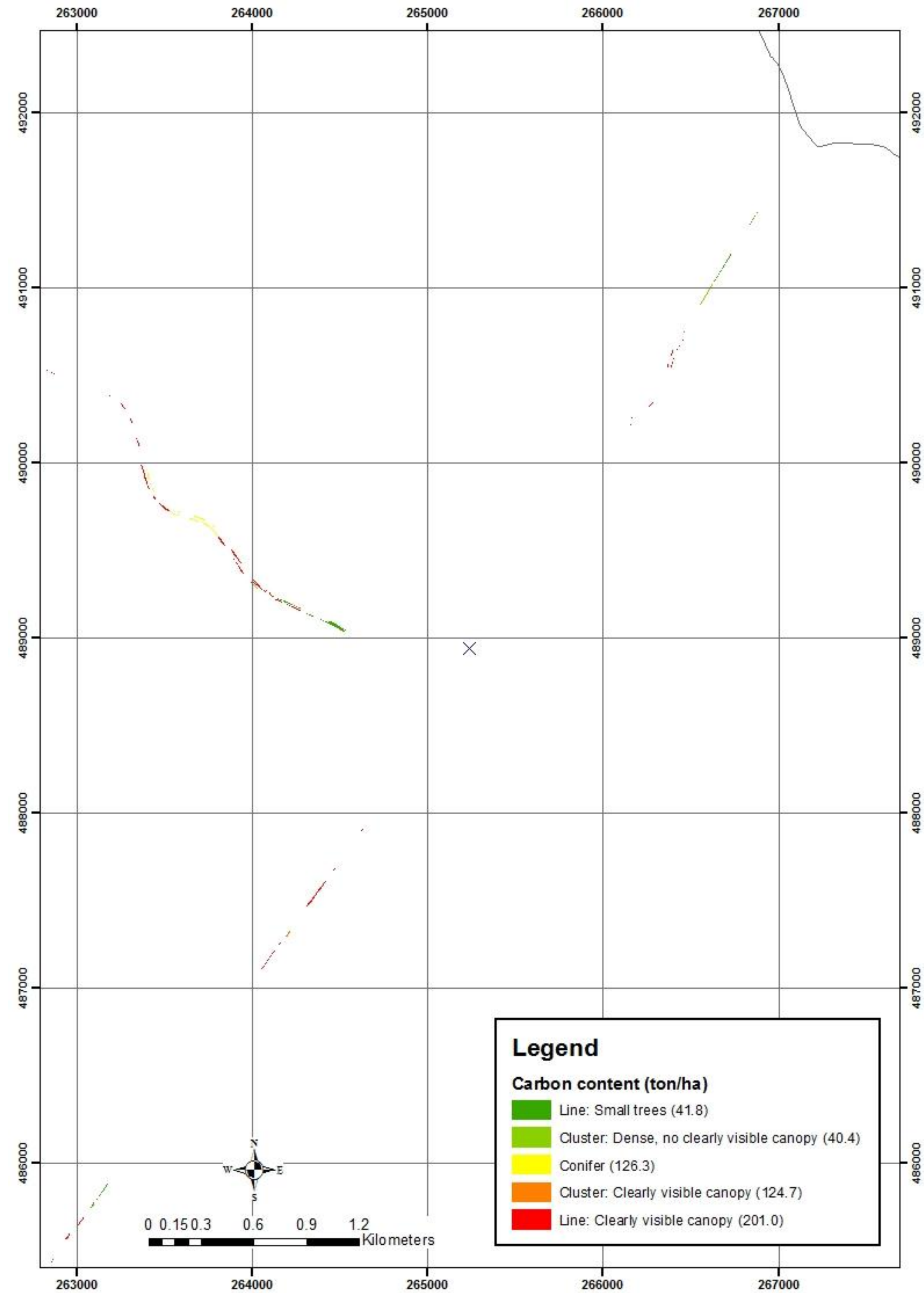
**Map sheet 5**


265000
266000
267000
268000
484000
483000
482000
481000
480000
479000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.15 0.3 0.6 0.9 1.2
Kilometers

**Map sheet 6**

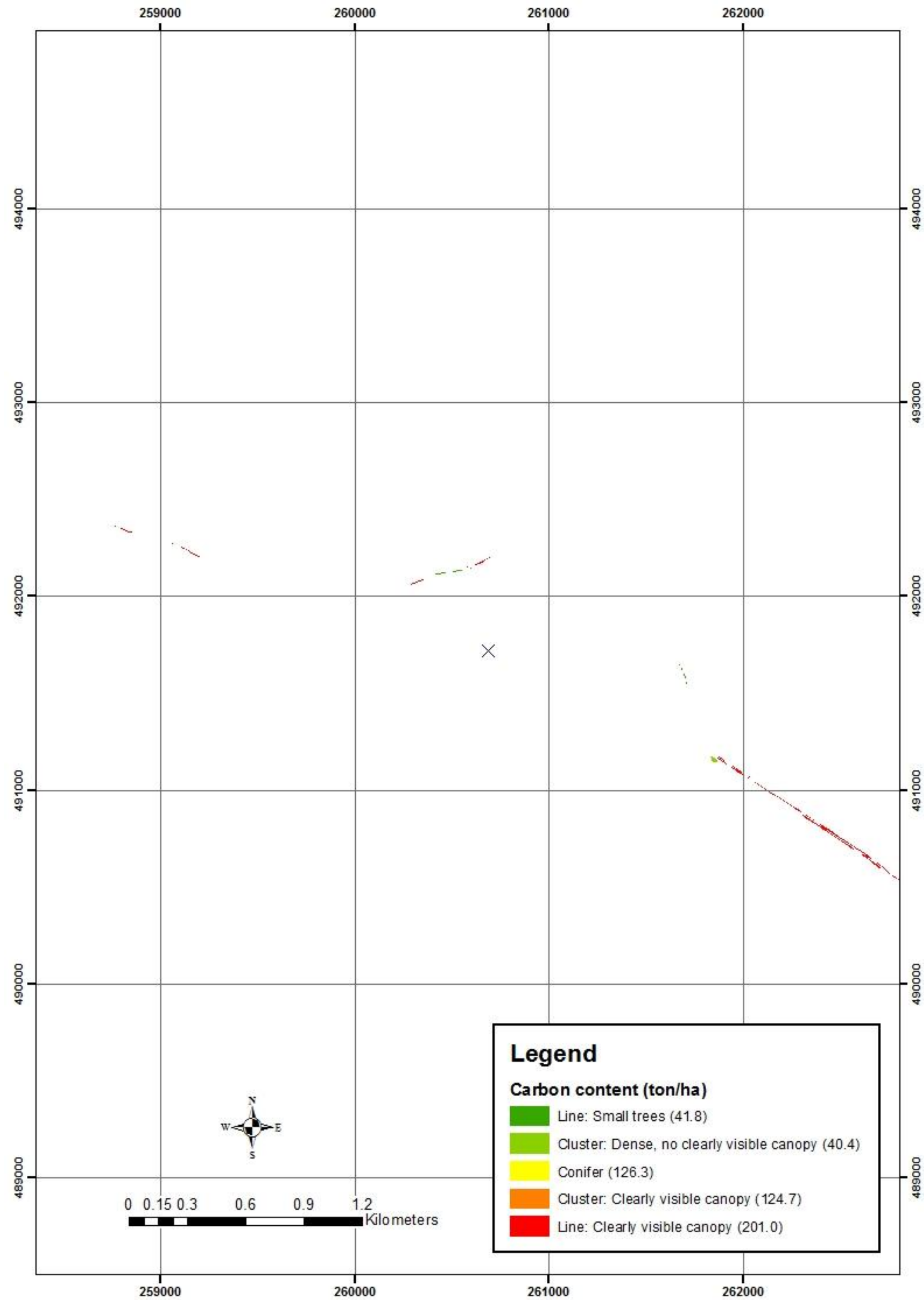

262000
263000
486000
485000
484000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.050.1 0.2 0.3 0.4
Kilometers

## Map sheet 7

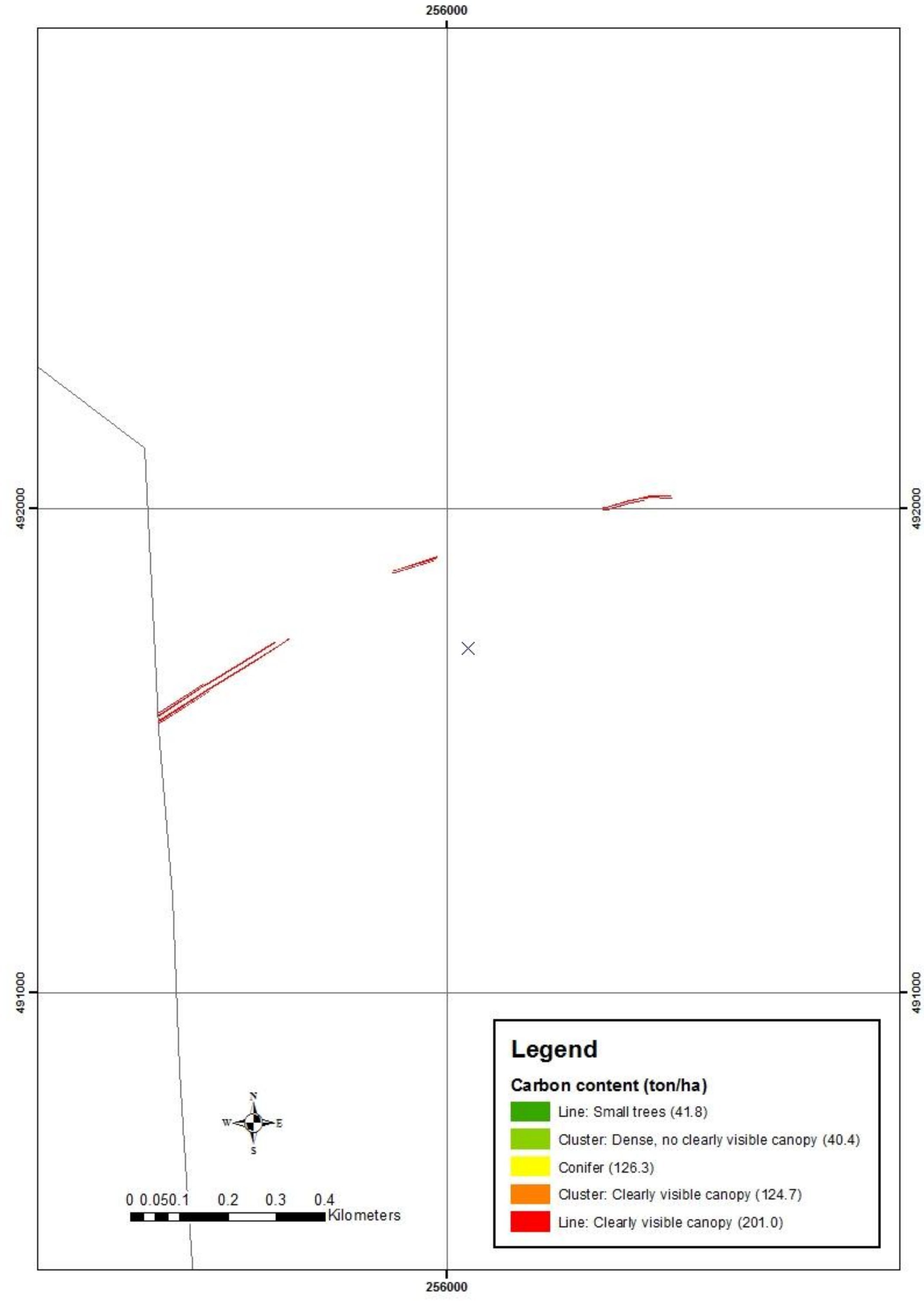


263000
264000
265000
266000
267000
492000
491000
490000
489000
488000
487000
486000
N
W
E
S
0 0.15 0.3 0.6 0.9 1.2
Kilometers
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)

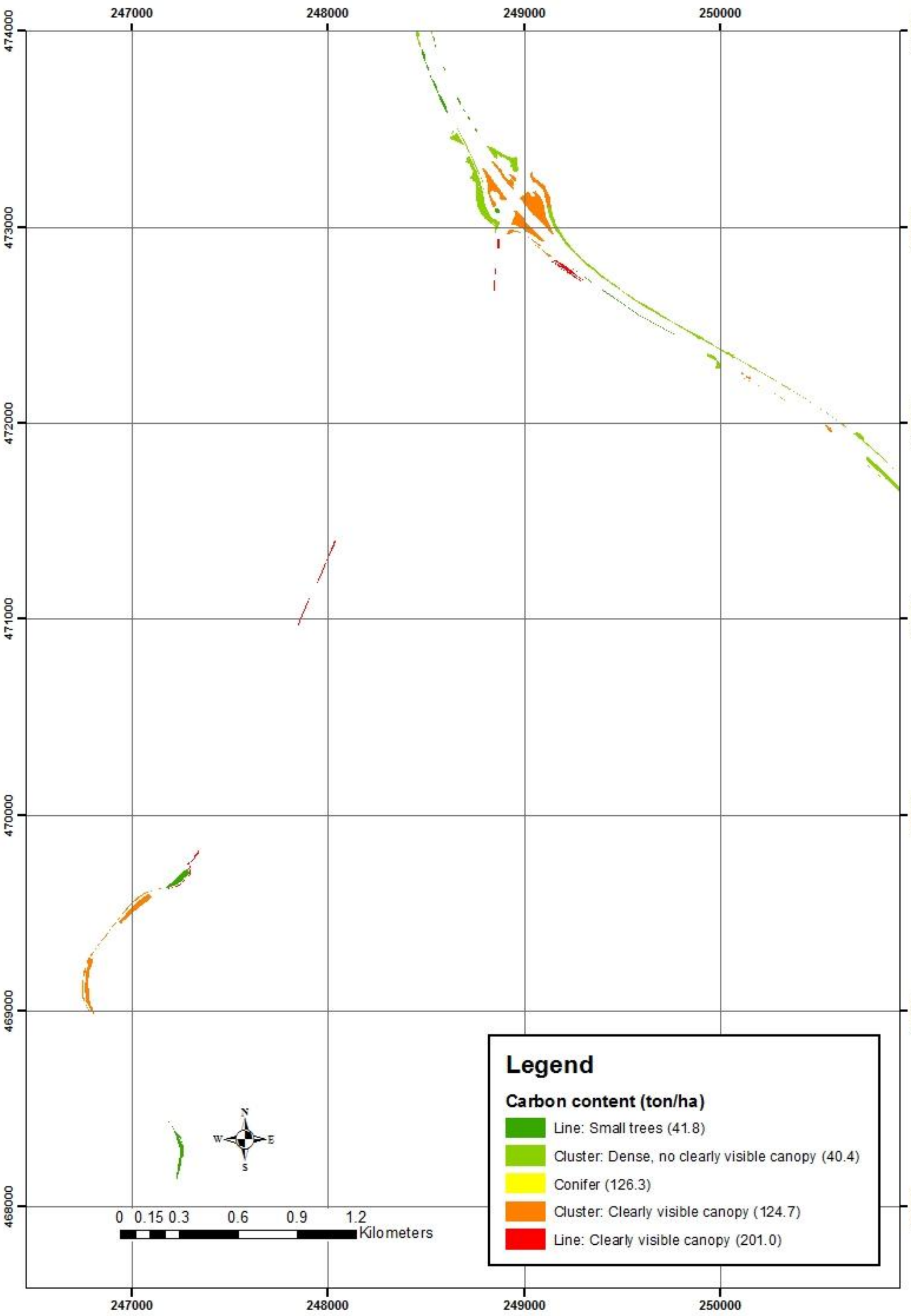
**Map sheet 8**


259000
260000
261000
262000
494000
493000
492000
491000
490000
489000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.15 0.3 0.6 0.9 1.2
Kilometers

**Map sheet 9**

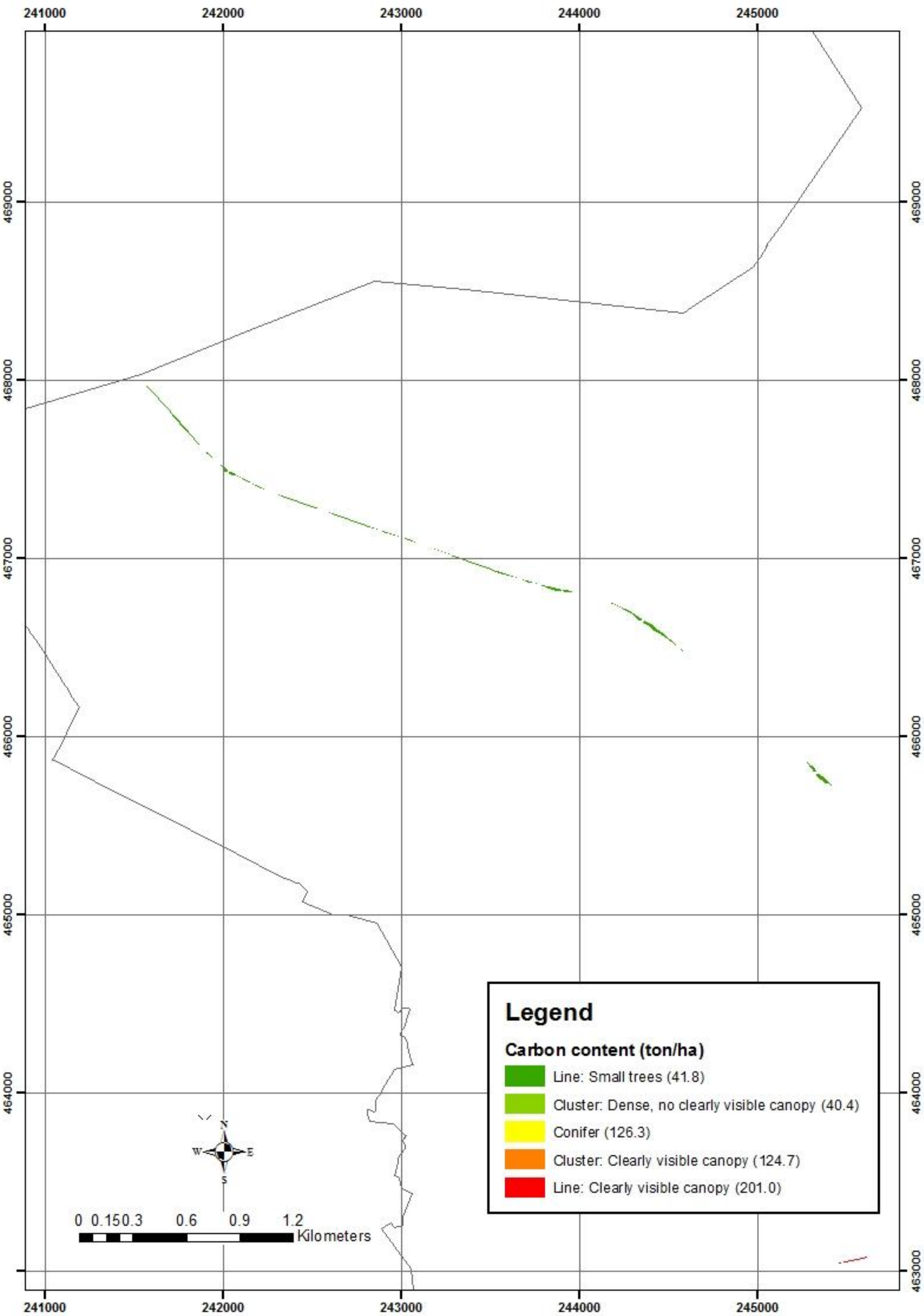

256000
492000
492000
491000
491000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.050.1 0.2 0.3 0.4
Kilometers
256000

**Map sheet 10**

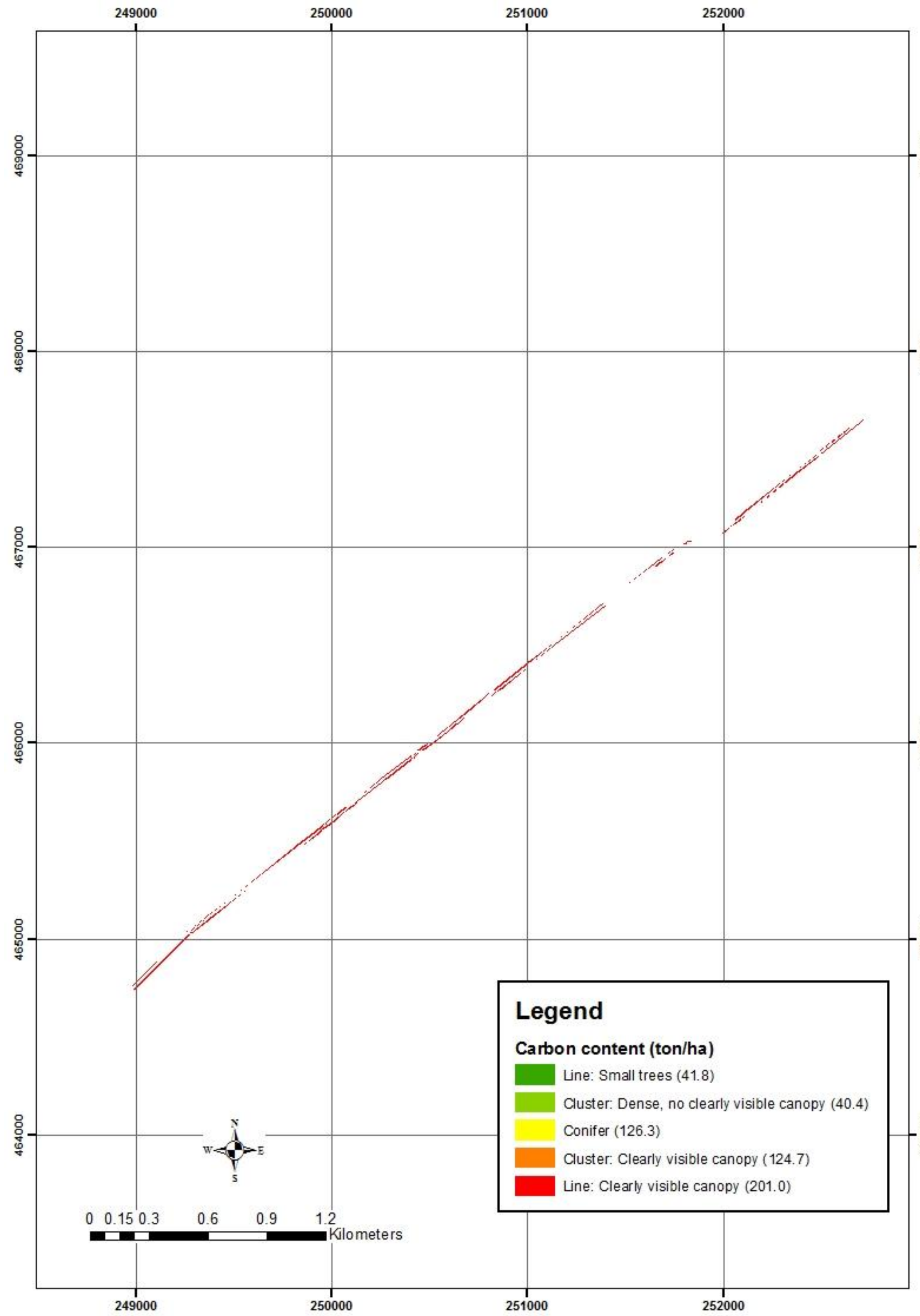


247000
248000
249000
250000
474000
473000
472000
471000
470000
469000
468000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.15 0.3 0.6 0.9 1.2
Kilometers

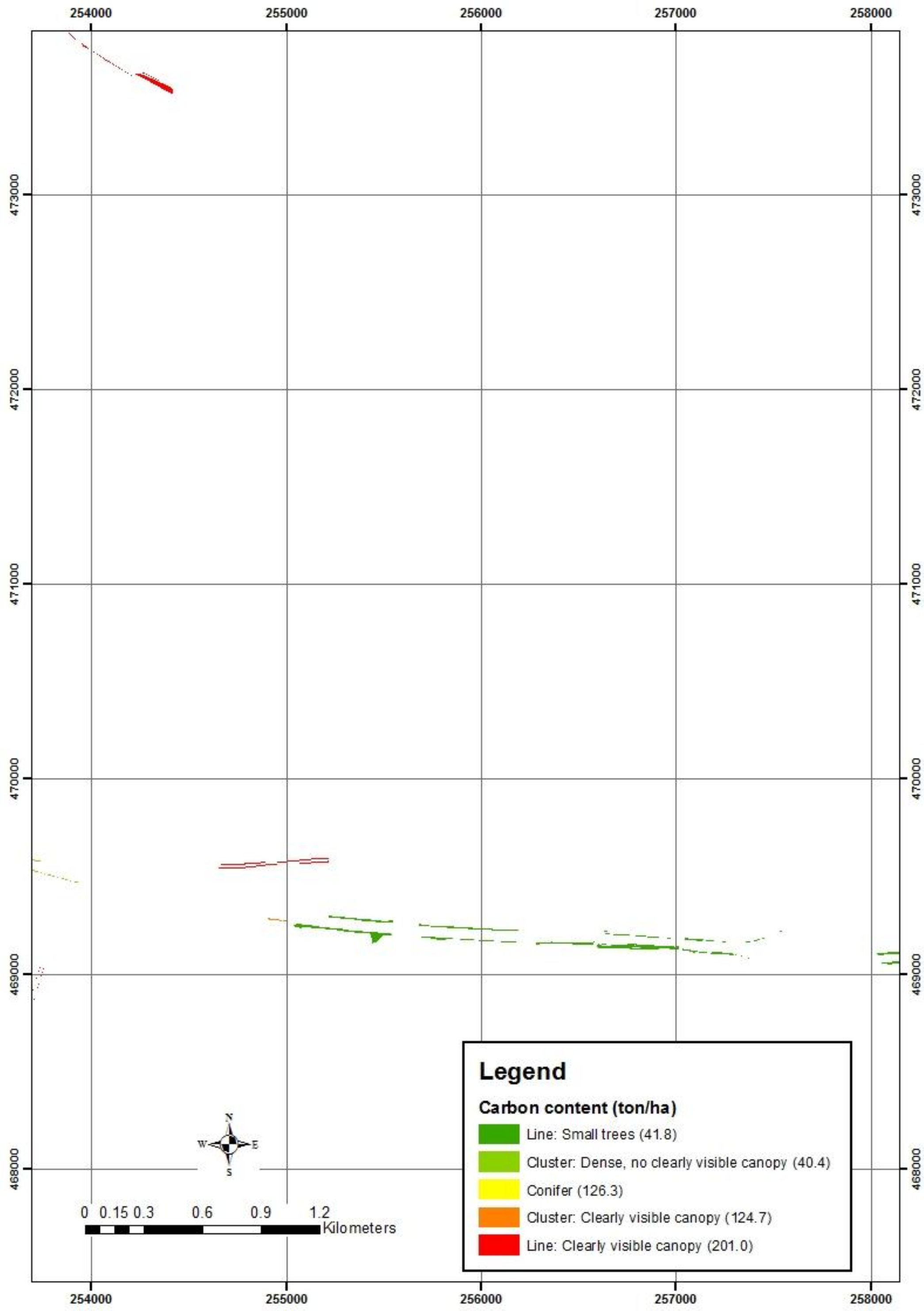
**Map sheet 11**


241000
242000
243000
244000
245000
469000
468000
467000
466000
465000
464000
463000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.15 0.3 0.6 0.9 1.2
Kilometers

**Map sheet 12**

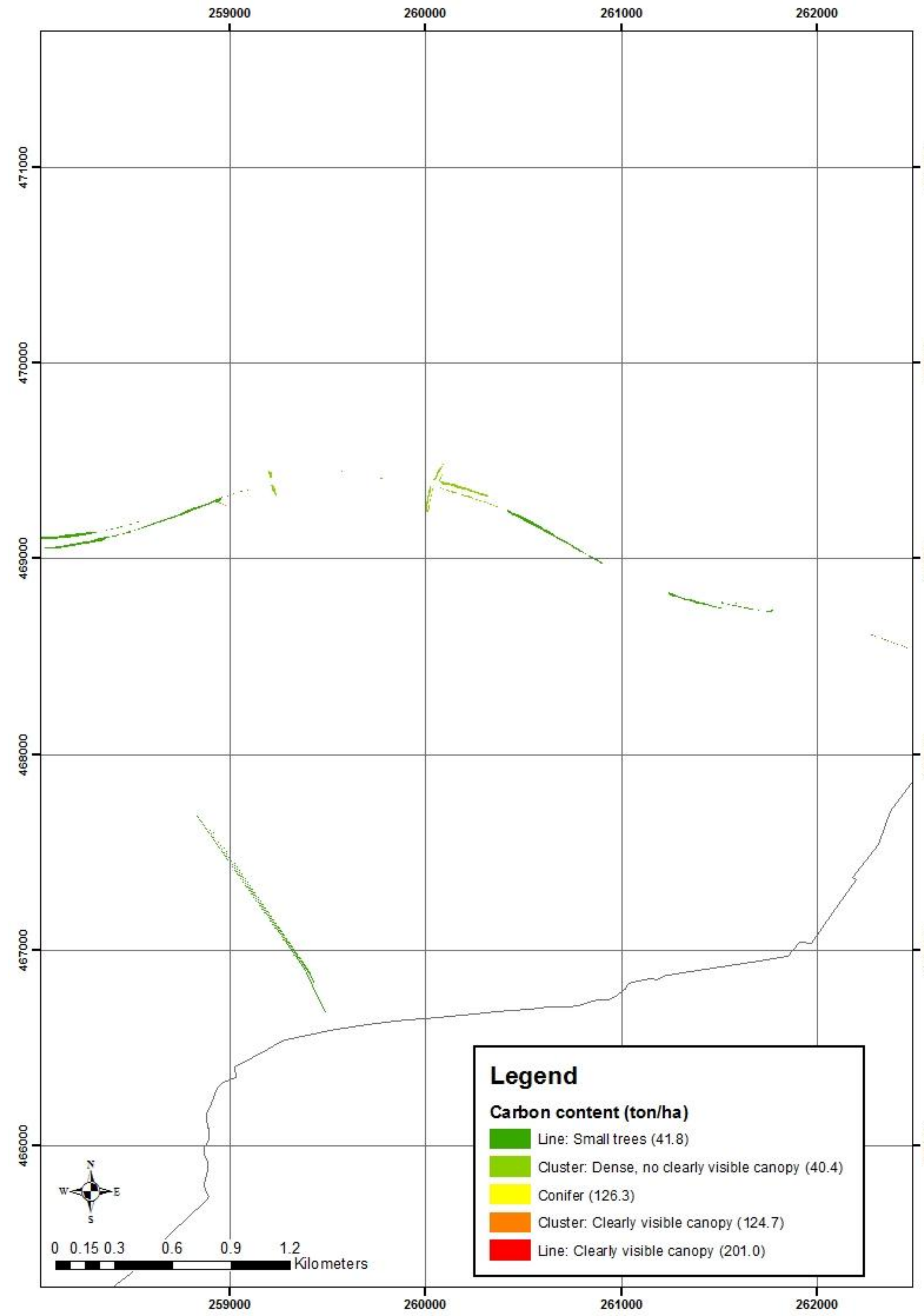

249000
250000
251000
252000
469000
468000
467000
466000
465000
464000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.15 0.3 0.6 0.9 1.2
Kilometers

**Map sheet 13**

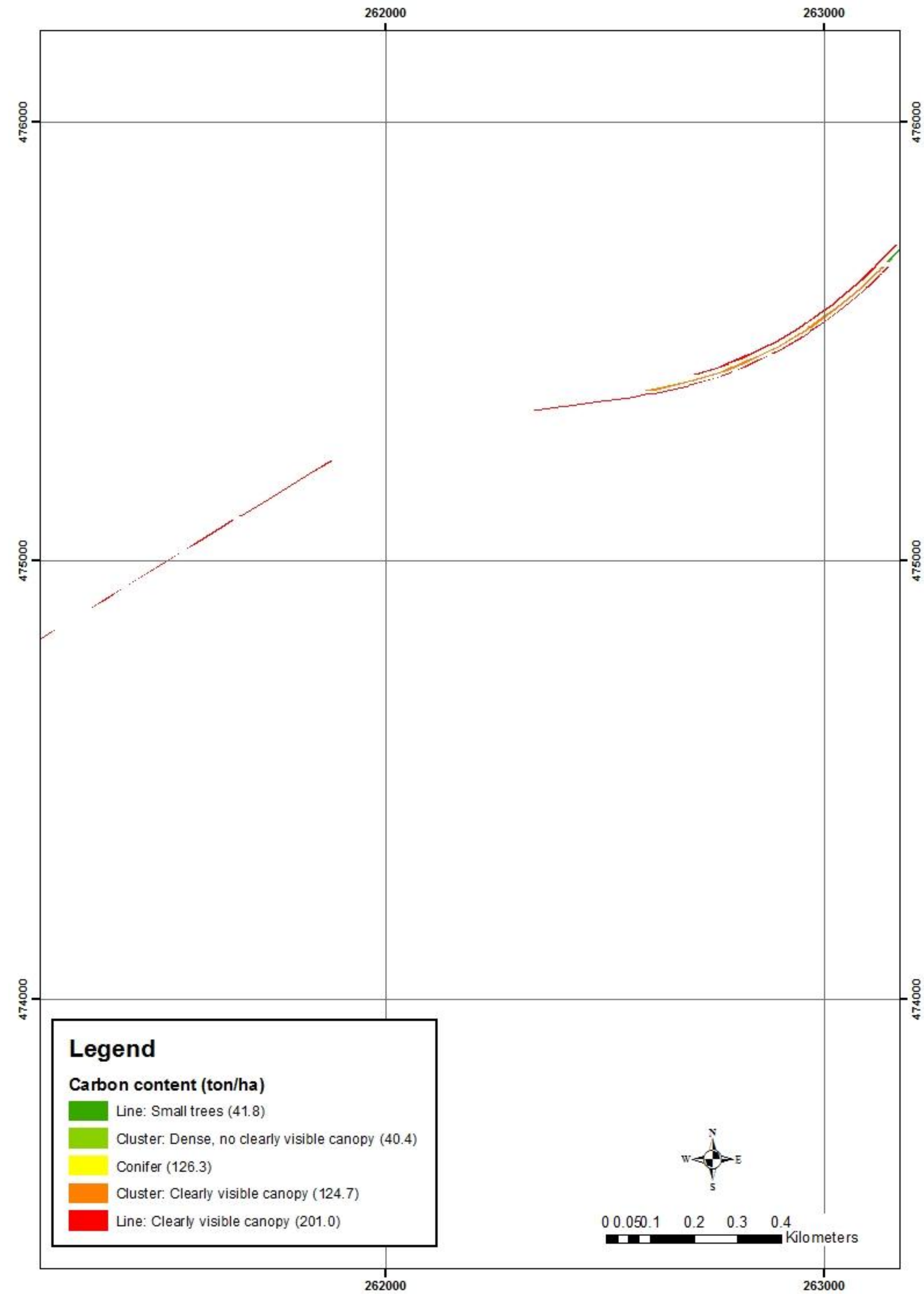


254000
255000
256000
257000
258000
473000
472000
471000
470000
469000
468000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
0 0.15 0.3 0.6 0.9 1.2
Kilometers
N
W
E
S

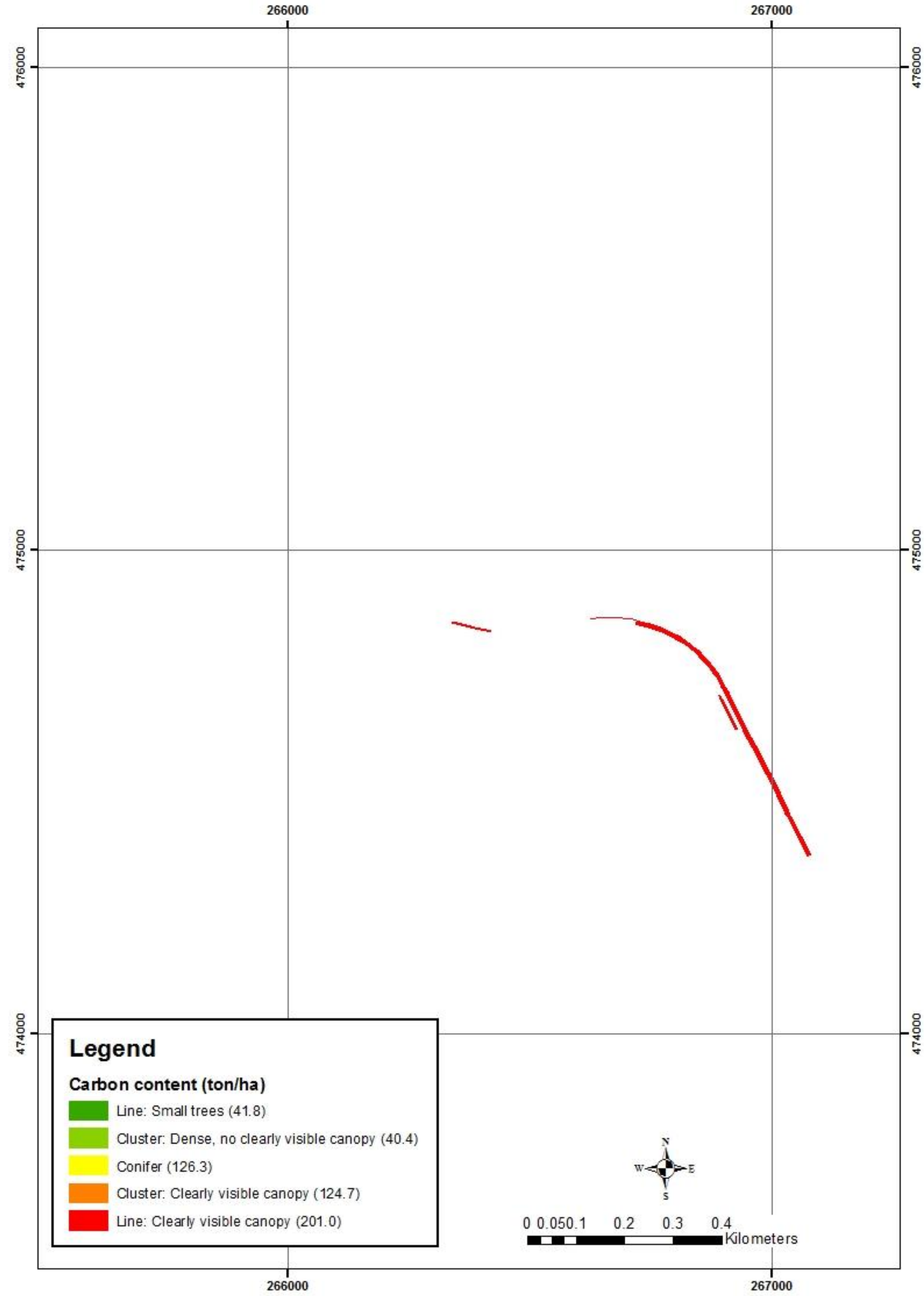
**Map sheet 14**


259000
260000
261000
262000
471000
470000
469000
468000
467000
466000
N
W
E
S
0 0.15 0.3 0.6 0.9 1.2
Kilometers
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)

**Map sheet 15**

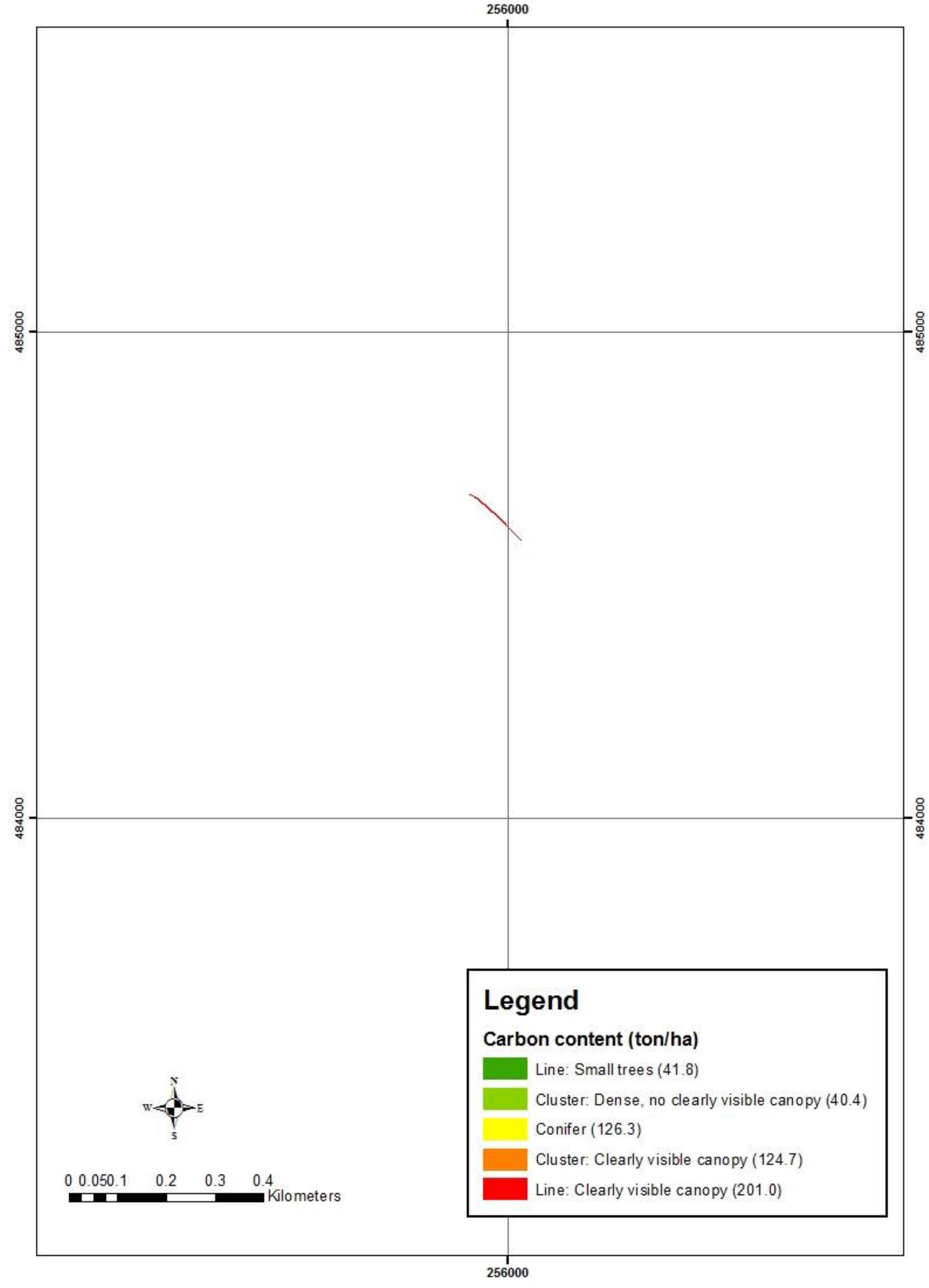

262000
263000
476000
475000
474000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.050.1 0.2 0.3 0.4
Kilometers

**Map sheet 16**



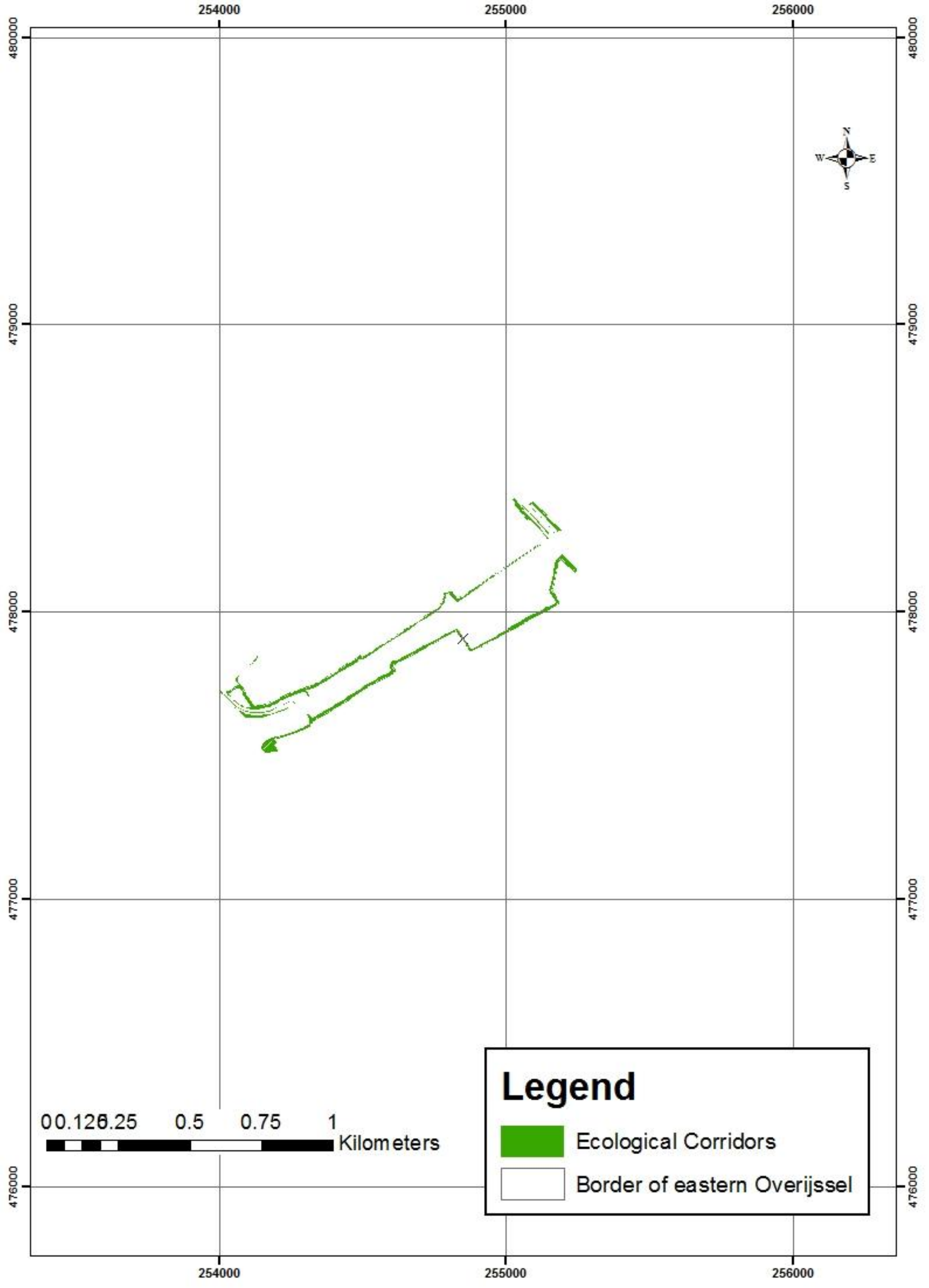
266000
267000
476000
475000
474000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.050.1 0.2 0.3 0.4
Kilometers

**Map sheet 17**

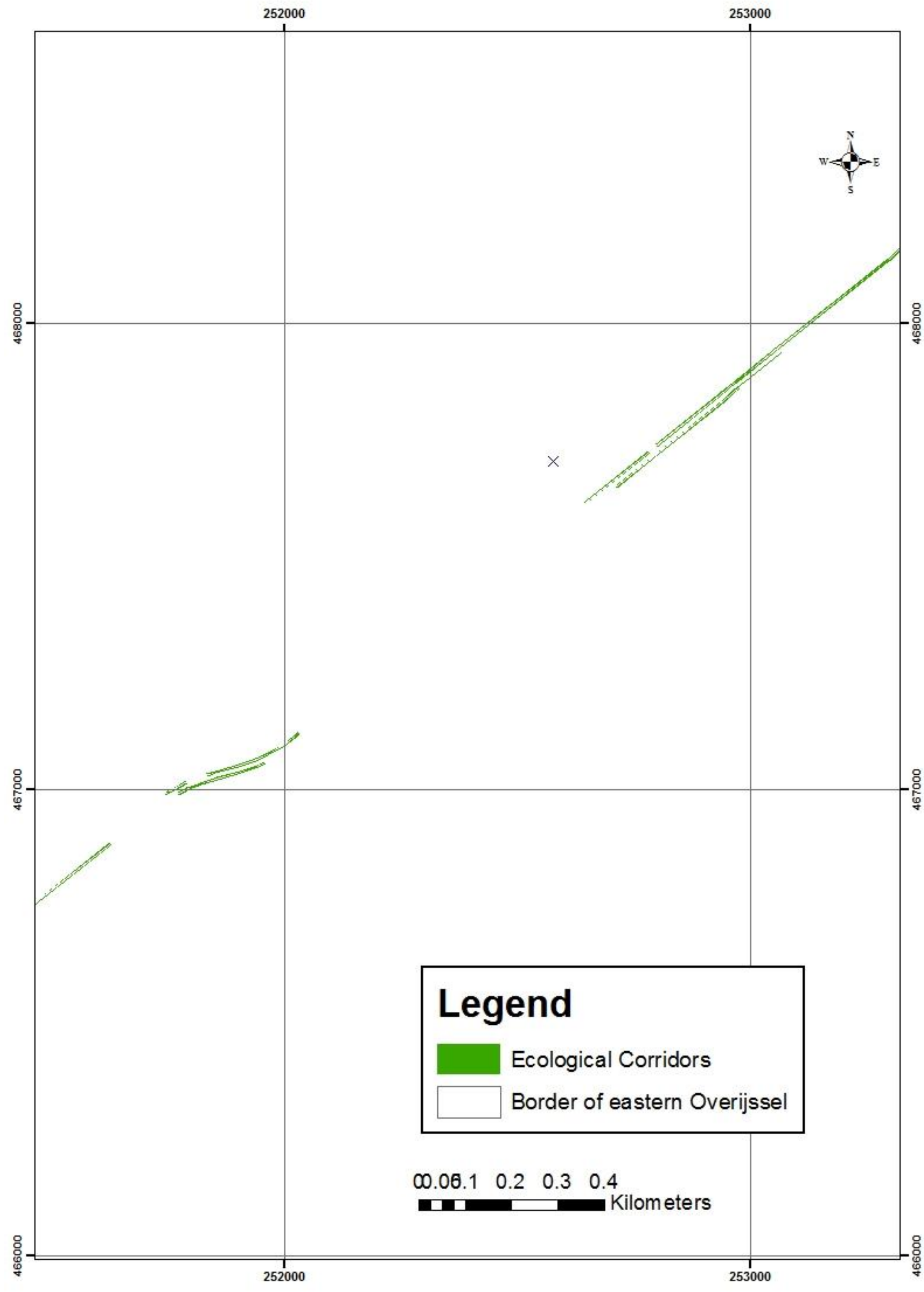

256000
485000
485000
484000
484000
Legend
Carbon content (ton/ha)
Line: Small trees (41.8)
Cluster: Dense, no clearly visible canopy (40.4)
Conifer (126.3)
Cluster: Clearly visible canopy (124.7)
Line: Clearly visible canopy (201.0)
N
W
E
S
0 0.050.1 0.2 0.3 0.4
Kilometers
256000

## Appendix 5: Potential ecological corridors map sheets

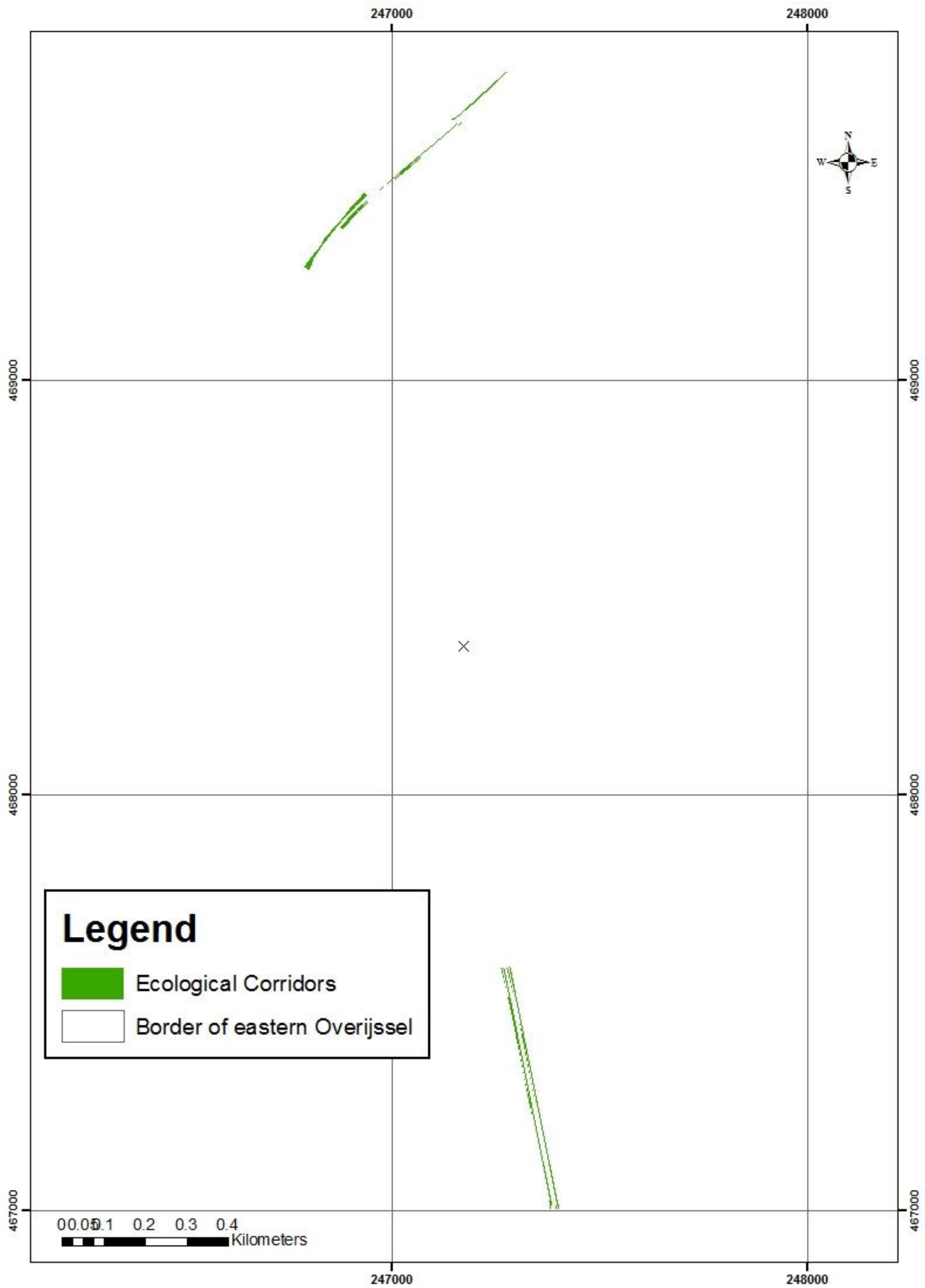
### Map sheet 2



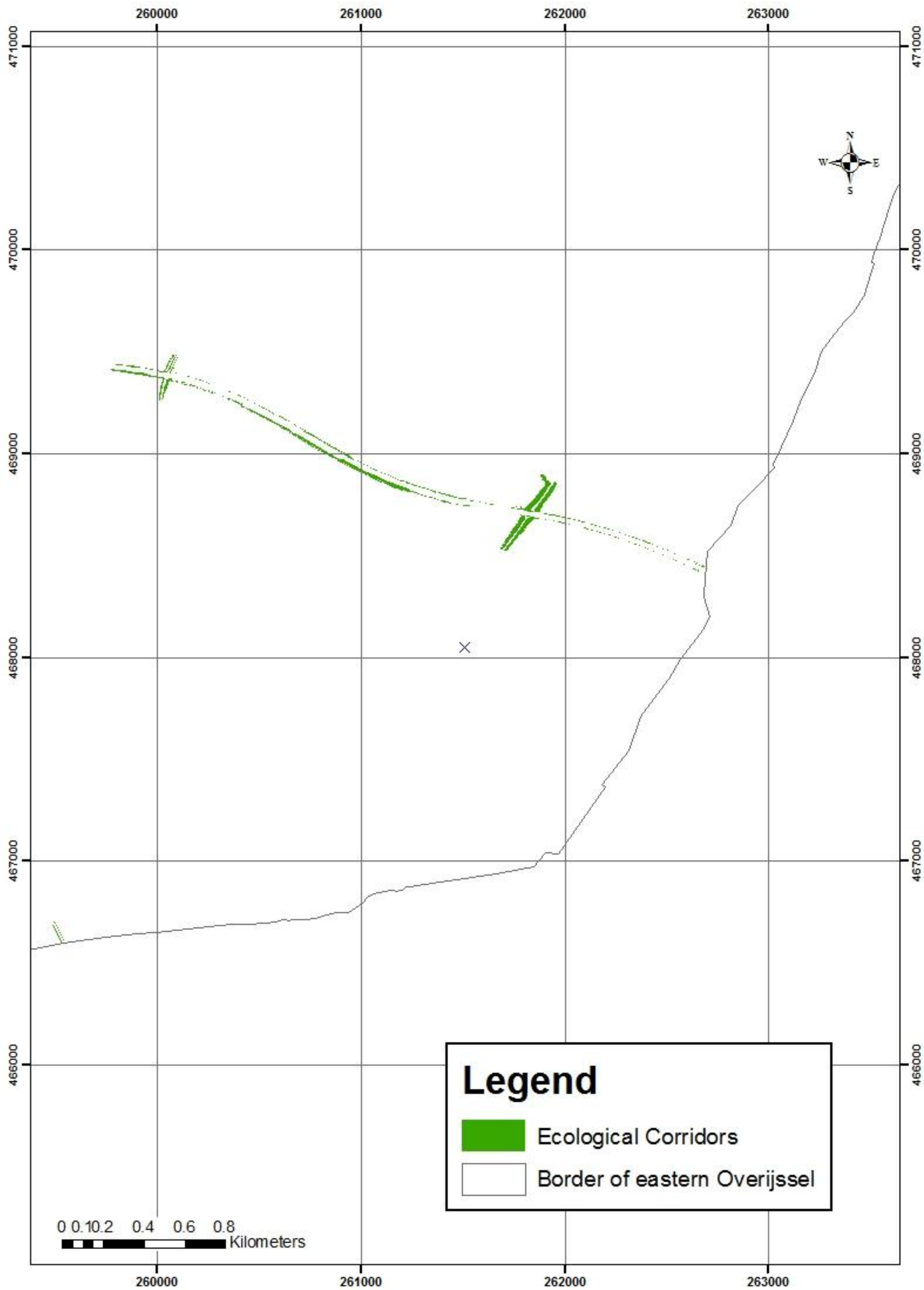
**Map sheet 3**


252000
253000
468000
467000
466000
N
W
E
S
Legend
Ecological Corridors
Border of eastern Overijssel
0 0.05 0.1 0.2 0.3 0.4
Kilometers

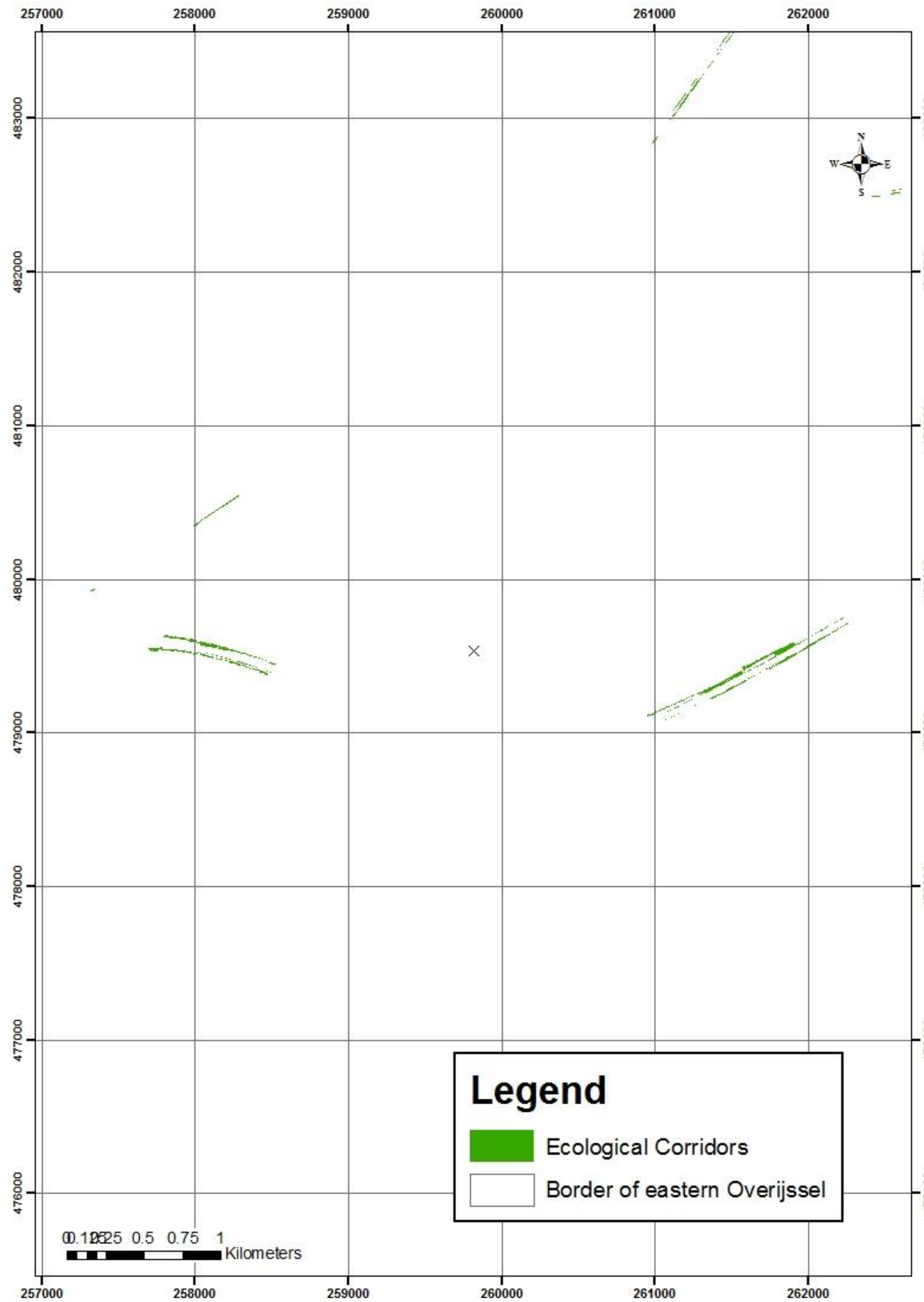
**Map sheet 4**


247000
248000
469000
468000
467000
N
W
E
S
Legend
Ecological Corridors
Border of eastern Overijssel
0 0.05 0.1 0.2 0.3 0.4
Kilometers

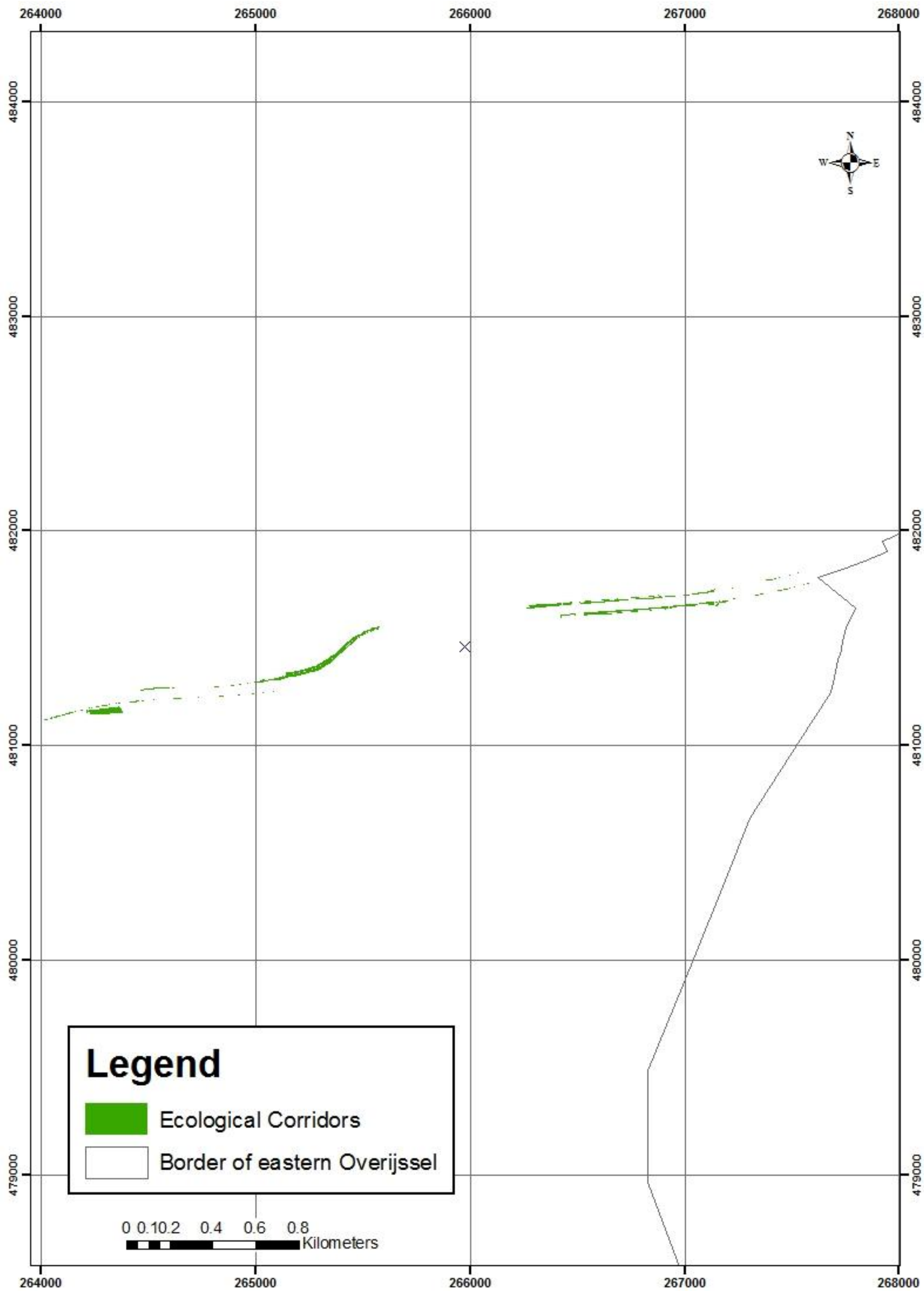
**Map sheet 5**


260000
261000
262000
263000
471000
470000
469000
468000
467000
466000
N
W
E
S
Legend
Ecological Corridors
Border of eastern Overijssel
0 0.10.2 0.4 0.6 0.8
Kilometers

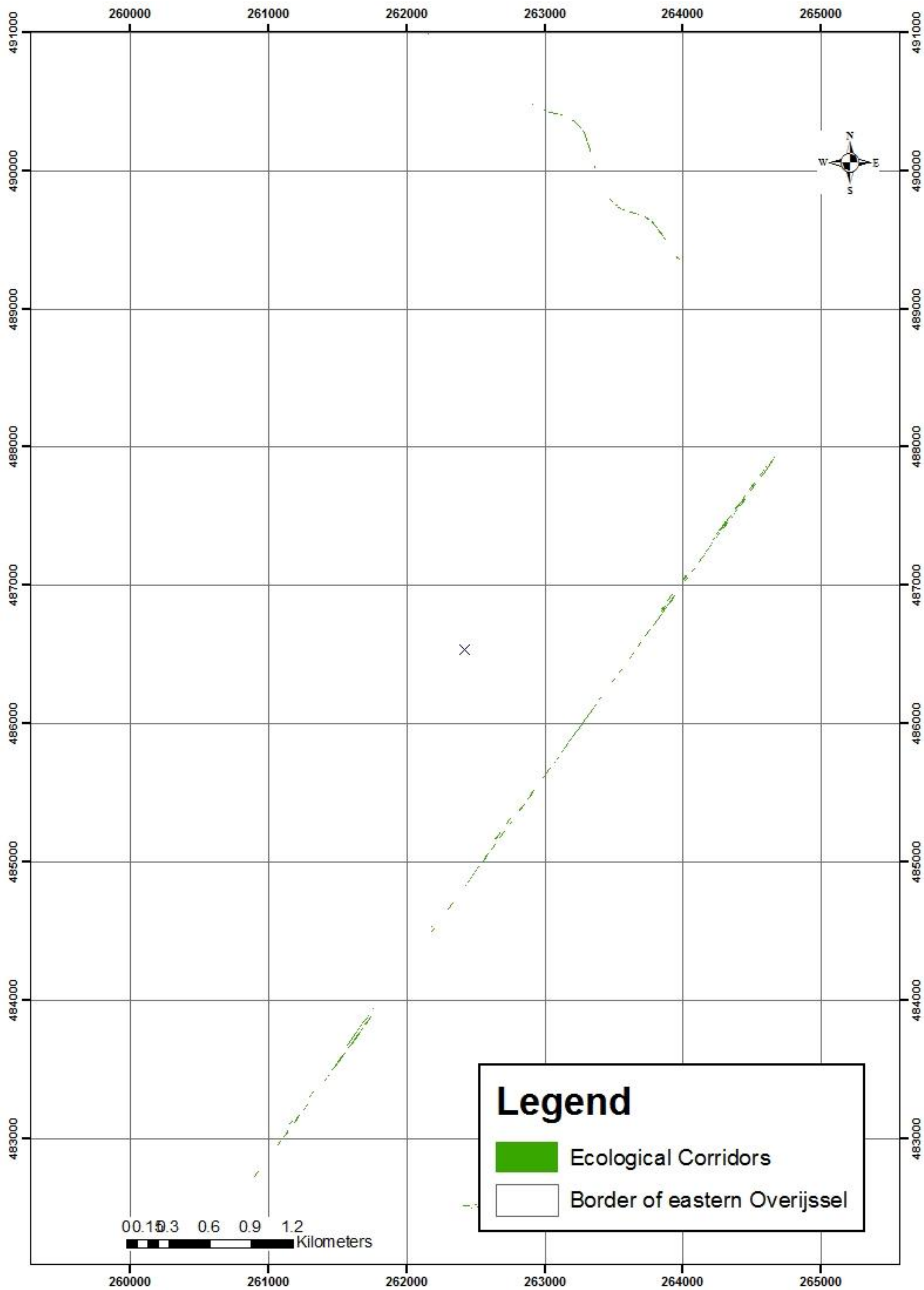
**Map sheet 6**


257000
258000
259000
260000
261000
262000
483000
482000
481000
480000
479000
478000
477000
476000
N
W
E
S
Legend
Ecological Corridors
Border of eastern Overijssel
0 0.125 0.25 0.5 0.75 1
Kilometers

**Map sheet 7**

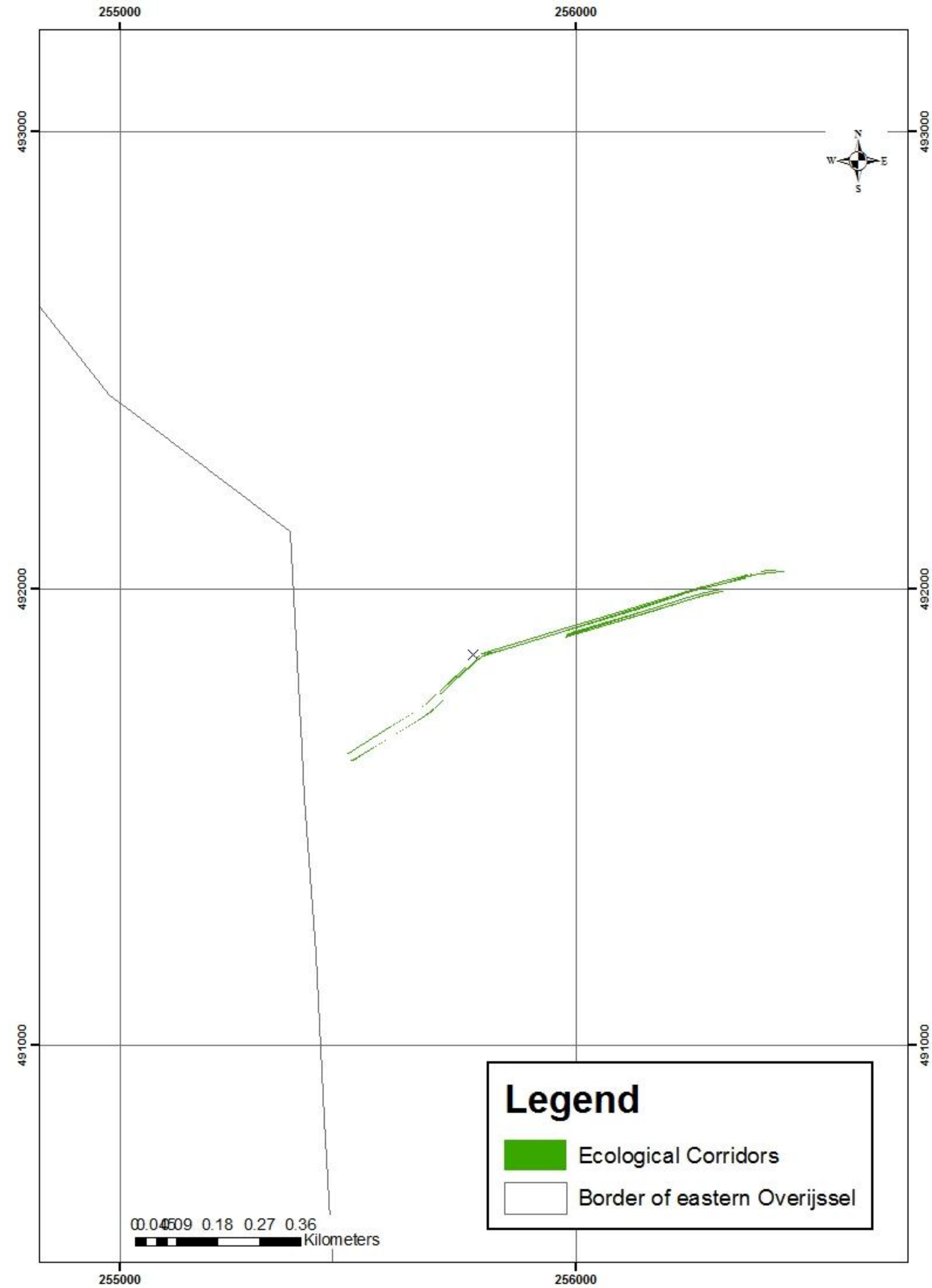

264000
265000
266000
267000
268000
484000
483000
482000
481000
480000
479000
N
W
E
S
Legend
Ecological Corridors
Border of eastern Overijssel
0 0.10.2 0.4 0.6 0.8
Kilometers

**Map sheet 8**



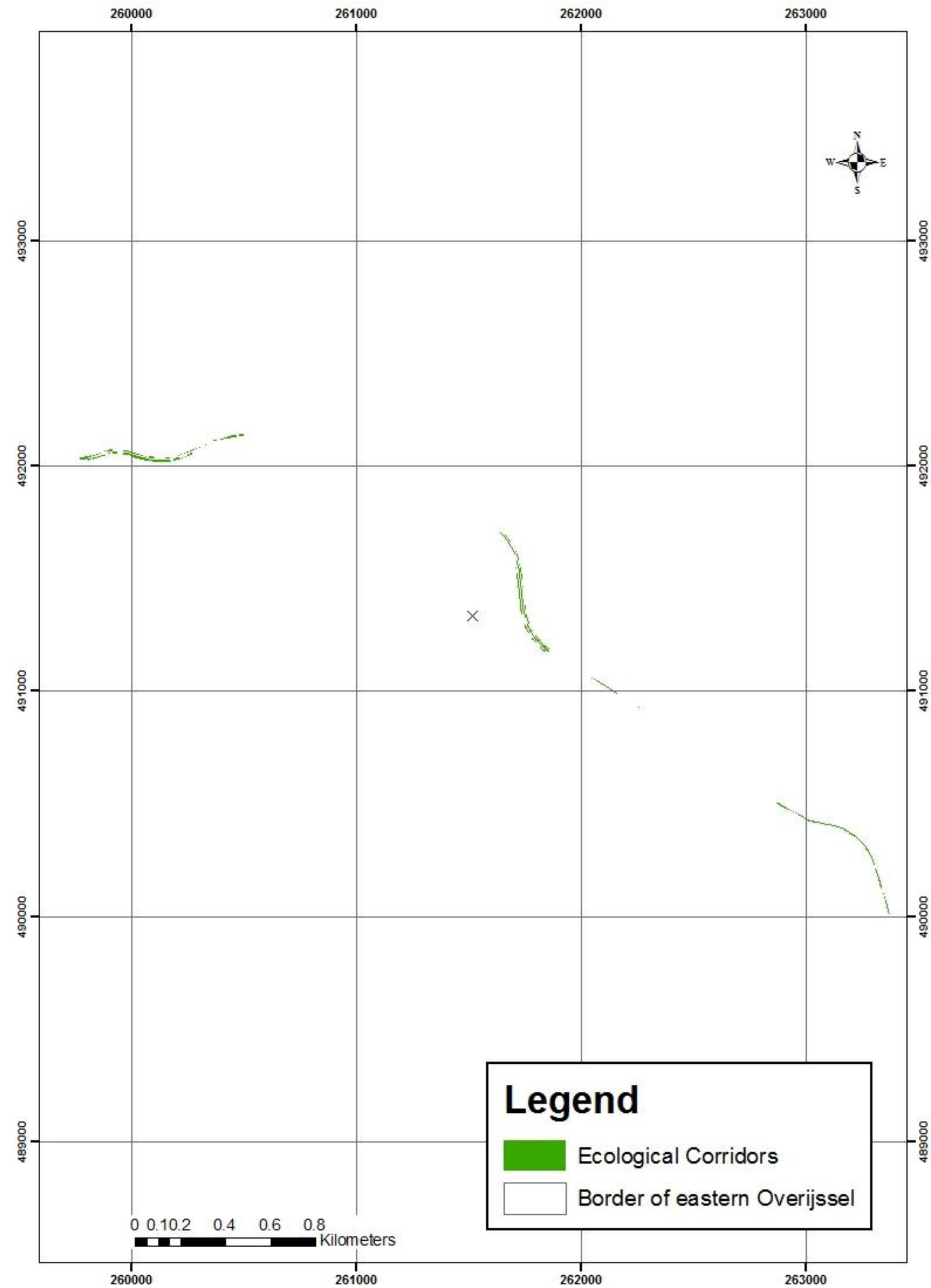
260000
261000
262000
263000
264000
265000
491000
490000
489000
488000
487000
486000
485000
484000
483000
N
W
E
S
Legend
Ecological Corridors
Border of eastern Overijssel
0 0.15 0.3 0.6 0.9 1.2
Kilometers

**Map sheet 9**



255000
256000
493000
492000
491000
N
W
E
S
Legend
Ecological Corridors
Border of eastern Overijssel
0 0.045 0.09 0.18 0.27 0.36
Kilometers
255000
256000

**Map sheet 10**


260000
261000
262000
263000
493000
492000
491000
490000
489000
N
W
E
S
Legend
Ecological Corridors
Border of eastern Overijssel
0 0.10.2 0.4 0.6 0.8
Kilometers