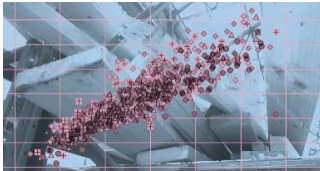# InFutUReWood

Stakeholder-oriented article no 2

Work Package 5: properties of the recovered wood and grading of secondary timber for structural use

Research question 1:

What are the differences between new wood and recovered wood that are important for strength grading?

Research question 2

What are the ways in which recovered wood, and new wood from less usual sources be safely and effectively graded?

Research question 3

How can assessment of individual members be improved for in situ assessment and reuse?

Research question 4

How can manufacturing processes, standards and regulations be improved to make use of all this?

The aim of this Work Package is to resolve the problem that **current standards for building design, and timber product manufacture, require strength grading on a basis that is not compatible with reclaimed wood**, and similarly varied new timber from less usual sources.

Currently, very large and expensive testing programmes are required, and timber needs to be from known origins, of known species and to have not been previously graded. This makes grading prohibitively expensive or impossible for all but new timber from major commercial species.

However, the current system of strength grading is built around the capability of first generation, non-computerised, grading technology. Modern and emerging grading machines are more able to make decisions on the fly, based on live data from recent grading, and the same level of safety can be achieved with less reliance on information not available for **reclaimed wood**, **minor species**, and from undermanaged forests.

The objective is for this new basis grading to be fully equivalent to that of new wood of the main commercial species.

The plan is to formulate one or more possible approaches to grading, to demonstrate how they work using extensive archive data from project partners, and new testing of recovered wood. This methodology is based on modelling with large datasets, comparing to current grading calculations, assessing safety, robustness and yields. Full grading studies are very expensive but data is available from studies already carried out for reanalysis by novel approaches. New testing will be used for verification. It is also necessary to define grade quality criteria that reflect the source material, design and fabrication needs based on information from other work packages. This is not just about the strength classes and secondary properties (mapped to those of new timber as far as possible), but more importantly related to other aspects of timber quality such as damage, degradation, dimensional tolerances, and other usability factors that go beyond the visual override criteria for grading of new timber. This task will be informed via discussion with industry.

The outcome will be a set of recommendations and supporting documents for the improvement of grading and manufacturing standards, and a system of grading that can be adopted in process for some categories of product.

Project Title: **Innovative Design For the Future – Use and Reuse of Wood (Building) Components (InFuTUreWood)**

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