

# Green Plank® Case Study

## Independent Field Testing of Coastal Decking Materials

Malmö City & RISE Field Trial at Sibbarp (Øresund) — Green Plank® natural fibers composites as a Long-Term Reference



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### 1. Project Overview

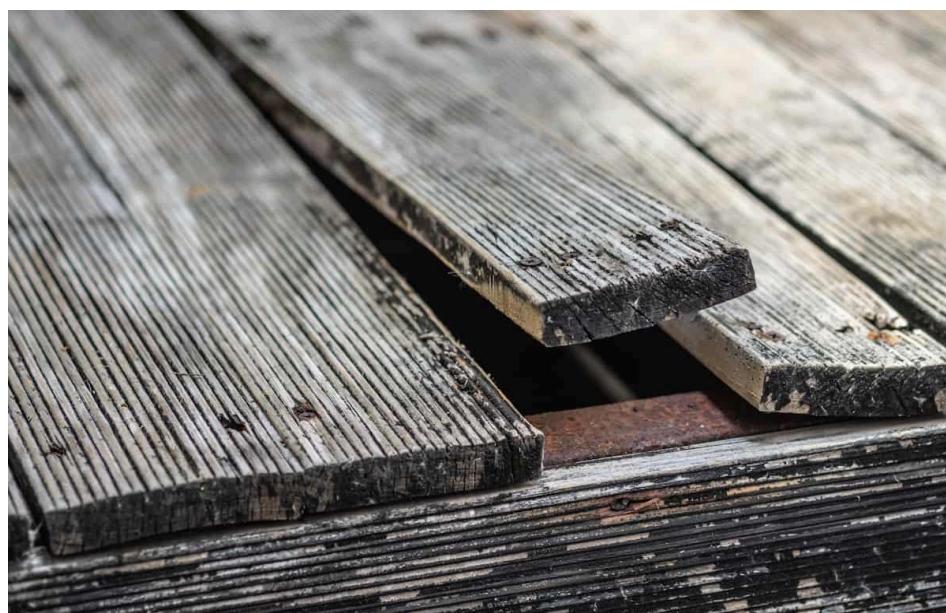
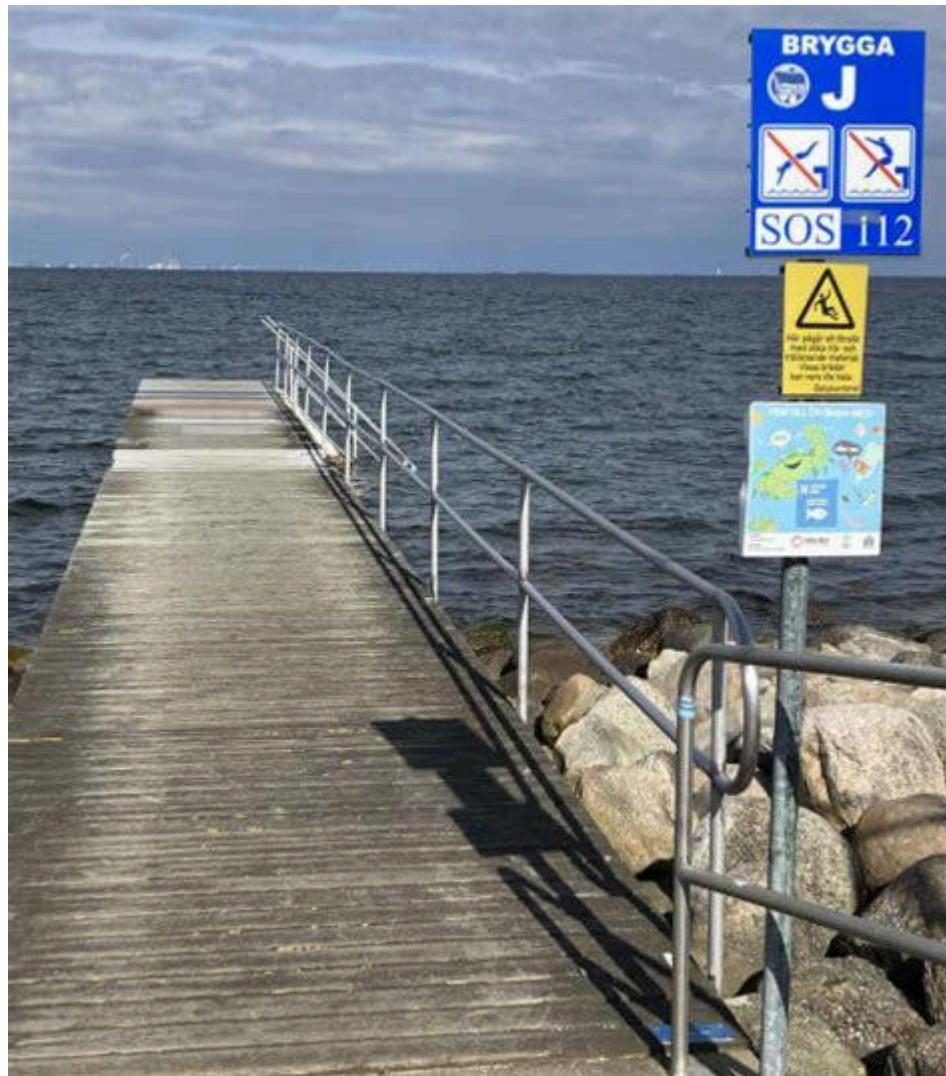
**Project name:** Field Trial of Decking Materials at **Øresund (Sibbarp Quays J & K)**

**Location:** Sibbarps badplats, Malmö, Sweden (near Øresundsbron)

**Year(s):** Initiated January **2013**; status reporting published in November 2016 (Progress report no. 3), with ongoing follow-up referenced by Malmö City

**Client / authority:** Malmö City (public)

**Application:** Public coastal jetty decking (high exposure environment)

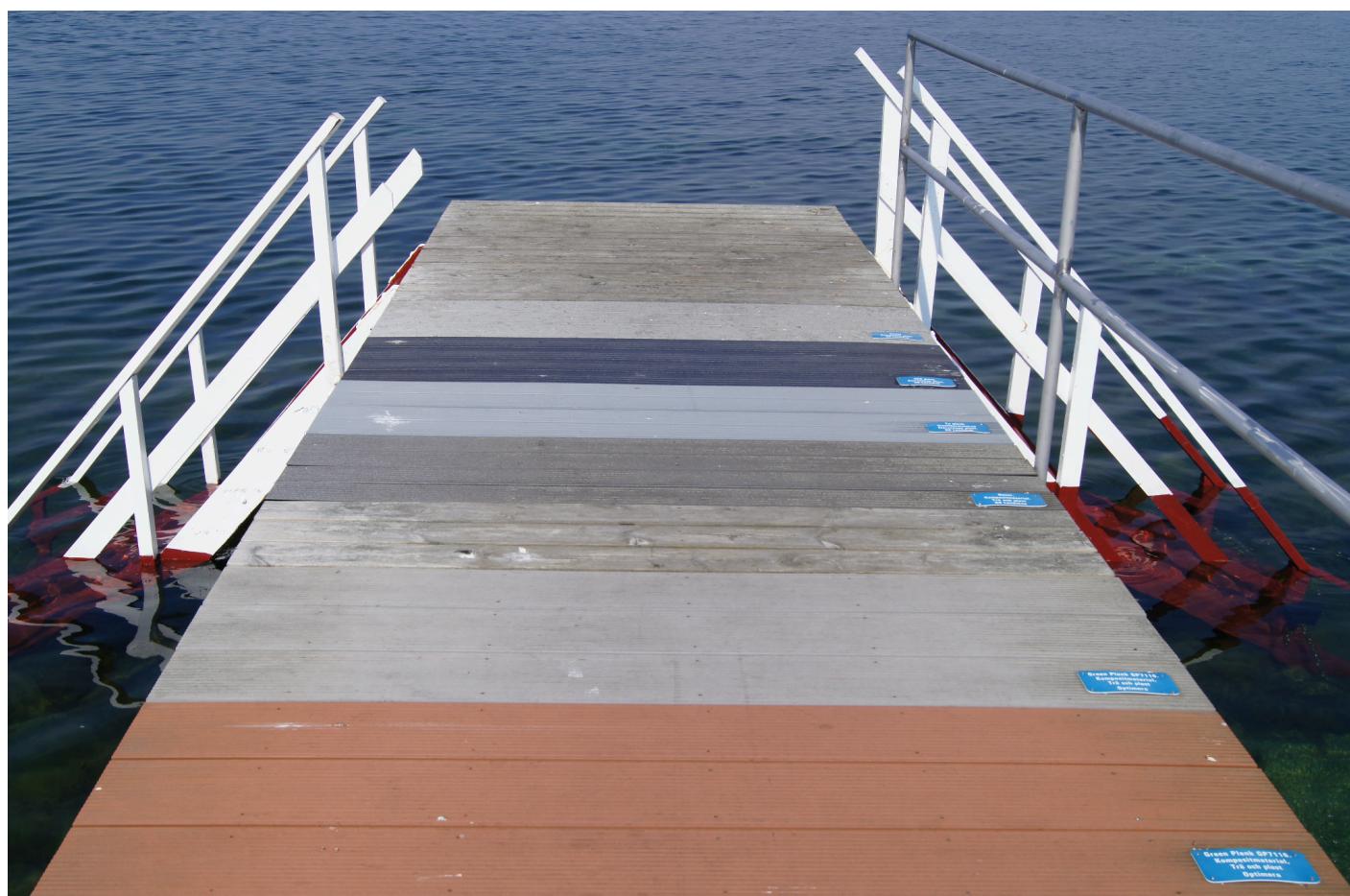


## 2. Background & Challenge

Malmö City initiated a structured, real-world field trial to evaluate commercially available decking materials—covering a wide range of wood species and treatment types, as well as recycled plastics and wood-plastic composites—installed in two coastal jetties (Quays J and K) at Sibbarp. The purpose was practical and procurement-oriented: identify materials that best meet municipal requirements for **appearance, durability, and function** in an exposed environment.

The setting is intentionally demanding. Coastal jetties see repeated wetting and drying, high UV exposure, and biological growth pressure. These conditions accelerate the failure modes that create municipal cost and risk: surface deterioration, loss of appearance, and mechanical issues that affect usability and safety.

A key challenge highlighted in the trial reporting is that several wood materials—despite being considered durable—showed tendencies such as **cracking, splintering, and edge/rib break-up**, which can create safety concerns in public environments (especially where barefoot use occurs).



### 3. Project Requirements

Based on the trial purpose and inspection criteria, Malmö City's requirements were clear:

- **Long service life** in a wet, biologically active coastal environment
- **Appearance retention** (avoid rapid greying and surface degradation)
- **UV and colour stability** across repeated summer exposure
- **Mechanical reliability and surface safety** (limit cracking, splinters, hazardous surface changes)
- **Low operational burden** suitable for public infrastructure maintenance planning
- **Evidence-based selection** using field performance and periodic inspections, not supplier claims

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## 4. Solution: Green Plank® System

Within Quay J, Malmö City/RISE included **Green Plank® GP7116** wood-plastic natural-fiber composite decking in **two colours: Beach Grey and Cherry Red** (“Green plank – grå” and “Green plank – röd” listed among the materials installed in Jetty J).

The material was installed as part of a broader comparative layout of approximately 25 materials and treatments, with repeated inspections over time. This approach allowed Malmö City to compare how materials behave under the same exposure conditions and the same real-world wear and contamination typical of public coastal assets.



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## 5. Key Technical Advantages

The published inspection reporting points to several performance outcomes that matter directly to municipal owners and specifiers:

- **Appearance stability:** The report explicitly notes that Green Plank maintained an attractive appearance and changed least in appearance among the materials in the trial.  
*“Green Plank har fortfarande ett mycket tilltalande utseende och har utseendemässigt förändrats minst ...”*
- **Colour retention relative to wood:** The report observes that wood materials generally became grey relatively quickly, while recycled plastics and composites largely retained their original colour after multiple summers—an outcome aligned with UV/appearance stability in exposed applications.
- **Reduced surface-safety risk compared to crack/splinter-prone woods:** Several wood species and modified woods are described as showing cracking and splintering tendencies that may cause injuries in barefoot contexts—exactly the kind of risk public owners seek to avoid in jetties, decks, and public walkways.

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## 6. Environmental & Sustainability Impact

This case is environmentally relevant for a simple, defensible reason: **long service life reduces replacement cycles**, which reduces material consumption and the emissions associated with removal, transport, and reinstallation.

In the report's observations, plastics and composites retained colour and remained largely free from visible staining growth compared with most wood materials—supporting a lower-intervention lifecycle in exposed public assets.

Importantly, this is not framed as a vague sustainability claim. The sustainability advantage is tied to an operational reality municipalities can verify: **durable performance that reduces the frequency of renewal and maintenance events**.

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## 7. Economic & Operational Benefits

For municipalities, the cost drivers in coastal decking are typically **renewal work and corrective maintenance**, not routine inspections. Materials that hold appearance and function longer reduce:

- Unplanned replacements
- Safety-driven corrective work (e.g., cracking/splinter remediation)
- Disruptions to public access during repair periods

This improves lifecycle cost predictability and reduces pressure on maintenance teams—outcomes aligned with the trial's core purpose: select materials that meet requirements in a demanding environment.

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## 8. Results & Outcomes

- The trial covered a broad set of materials and was inspected repeatedly, with findings reported by SP/RISE in Progress Report No. 3 (published 2016).
- **In that report, Green Plank is singled out for maintaining a highly appealing appearance and changing least visually in the full trial set.**
- There are continued Malmö City follow-ups beyond the published reporting window, with Green Plank still performing strongly after long-term exposure.



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## 9. Conclusion: Why This Case Matters

This is a rare type of reference that procurement teams can trust: **a third-party documented field exposure trial**, run by a major **Nordic** municipality in cooperation with Research Institutes of Sweden (RISE), in one of the most harsh real-world environments—coastal jetties near the Øresund Bridge.

- **For municipalities:** evidence that appearance retention, functional performance, and safety-related surface stability can be verified in the field before standardizing a material.
- **For architects and consultants:** a credible reference that performance and aesthetics can hold under harsh exposure without relying on lab-only claims.
- **For buyers:** an example of how lifecycle thinking (maintenance and replacement frequency) becomes the practical route to lower CO<sub>2</sub> impact and better sustainability outcomes.

The most persuasive point here is also the simplest: **in an apples-to-apples field trial, Green Plank NFC is documented as one of the least visually changed materials—and that matters because appearance stability is often the first driver of replacement in public infrastructure.**

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# Annex – Materials Included in the RISE / Malmö City Field Trial

## Reference report:

**Försök med olika material i bryggor vid Öresund – Lägesrapport nr 3**

SP Sveriges Tekniska Forskningsinstitut (now RISE)

SP Rapport 2016:83, ISSN 0284-5172

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## Purpose of the Trial

The field trial was initiated by Malmö City in cooperation with SP Sveriges Tekniska Forskningsinstitut (now RISE) to evaluate the **appearance, durability, mechanical performance, and functional suitability** of commercially available decking materials exposed to real coastal conditions.

The materials were installed in two jetties (J and K) at **Sibbarps badplats**, north of the Øresund Bridge, and were subject to periodic inspections over several years.

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## Material Categories Tested

The trial included a broad and representative range of materials available on the European market at the time, grouped as follows:

### 1. Preservative-Treated and Modified Wood

- Impregnated pine (NTR Class A)
- Impregnated pine with surface treatment (Sioo)
- Pine heartwood (with and without surface treatment)
- Thermowood® (heat-treated pine)
- Accoya® (acetylated radiata pine)
- Kebony® (furfurylated Southern Yellow Pine)
- Organowood®-treated pine

### 2. Naturally Durable Hardwood Species

- Oak
- Robinia (false acacia)
- Bangkirai / Kirai
- Azobé
- Cumaru
- Ipé
- Western Red Cedar (*Thuja plicata*)
- Roble
- Rubberwood plywood

### 3. Recycled Plastics and Composite Materials

- Recycled plastic decking products
- Glass-fiber reinforced plastic composites
- Wood-plastic composites (WPC), including natural-fiber composites

**Green Plank® natural-fiber composite decking (model GP7116)** was included in Jetty J in two colours:

- Green Plank GP7116 – Grey
- Green Plank GP7116 – Red

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### Inspection Scope

The materials were assessed through systematic inspections focusing on:

- Colour stability and UV-related ageing
- Surface condition and appearance
- Biological growth (algae and discolouring fungi)
- Cracking, splintering, and deformation
- Mechanical behaviour and functional suitability
- Safety-related surface characteristics

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### Key Published Observation Relevant to Green Plank®

In **SP Rapport 2016:83**, RISE states:

***“Green Plank har fortfarande ett mycket tilltalande utseende och har utseendemässigt förändrats minst av samtliga material i hela provningen.”***

(English meaning: *Green Plank still has a very appealing appearance and has changed least in appearance of all materials in the entire test.*)

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### Status

The report documents inspections up to September 2016. According to Malmö City's continued operational follow-up, the Green Plank natural-fiber composite decking installed in the trial has continued to perform strongly in terms of appearance and functionality well beyond the formal reporting period.

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**Reference:** [Försök med olika material i bryggan vid Öresund Lägesrapport nr 3](#)

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Through applied research, more than 130 technology infrastructures for development, testing, and demonstration, and strong interdisciplinary expertise, RISE's over 3,000 employees support the entire innovation process—from early concepts to market implementation.

By working closely with industry, municipalities, and public authorities in Sweden and internationally, RISE contributes to the transition towards a more sustainable and resilient society.