# Acronem Consulting Australia Pty Ltd

24th November 2023

REF: ACA230827 231124

**ENGINEERING EVALUATION CERTIFICATE:**
**EKODECK Maxiboard DECKING BOARDS, 180MM x 35MM**

**This certificate is issued by:** Acronem Consulting Australia Pty Ltd

**This certificate is issued to:** Ekologix Australia Pty Ltd,
Unit 1, 20 Sabre Drive,
Port Melbourne, VIC, 3207, Australia

This document serves as a report from a professional engineer in accordance with Clause A5G3(1)(e) of the National Construction Code 2022 Volumes One, Two & Housing Provisions pursuant to demonstrating that *Ekodeck Maxiboard*, installed in accordance with the requirements detailed below contributes to a building or structure achieving NCC 2022 B1P1(2)(b) & H1P1(2)(b).

Deemed-to Satisfy clauses B1D3(b)(iii) and 2.2.3(b)(iii) reference AS/NZS 1170.1 for the determination of imposed actions. AS/NZS 1170.1 Table 3.1 provides reference values of imposed floor actions.

In all cases the design and use of *Ekodeck Maxiboard* must be independently verified, accounting for all relevant performance requirements, including, but not limited to, suitability for the particular application and strength of the supporting structure.

The Ultimate Limit State (ULS) & Serviceability Limit State (SLS) performance of *Ekodeck Maxiboard* have been verified based on:

- Testing in accordance with the principles of AS/NZS 1170 series at an Accredited Testing Laboratory (Report No: 21-1239, GZHH00510141); and,
- Calculation of design capacities of the *Ekodeck Maxiboard* by a professional engineer in accordance with AS/NZS 1170.0, Appendix B; and,
- Comparison with the design action effects based on combinations of actions for strength and serviceability for the imposed floor actions provided in AS/NZS 1170.1, Table 3.1.

*Ekodeck Maxiboard* shall be installed in accordance with *Ekodeck Decking Maxiboard / Installation Guide, V12.22* onto supports;

- with minimum bearing width of 45mm; and,
- with maximum support spacing / design concentrated action combinations, of;
    - 950mm/1.8 kN, and
    - 800mm/2.7kN, and
    - 600mm/2.7kN, and
- with each board installed over at least two (2) spans.

*Ekodeck Maxiboard* is suitable for external decking applications in accordance with the following AS/NZS 1170.1 Table 3.1 imposed floor actions and maximum support spacings.

## EKOLOGIX Maxiboard DECKING SYSTEM
## Performance to AS/NZS 1170.1:2002, T.3.1

| Type of activity / occupancy for part of building or structure | Specific uses | Uniformly distributed actions (kPa) | Concentrated actions (kN) | Max. Joist Spacing c/c (mm) |
|---|---|---|---|---|
| A Domestic & residential activities (see also Cat C) | | | | |
| A1 Self- contained dwellings | General areas, private kitchens and laundries in self-contained dwellings. | 1.5 | 1.8(1) | 750 |
| | Balconies used for floor type activities in self-contained dwellings: (a) less than 1m above ground level | 1.5 | 1.5kN/m run along edge | 750 |
| | (b) other | 2.0 | 1.8(1) | 750 |
| | Stairs(2) and landings in self- contained dwellings. | 2.0 | 2.7 | 700 |
| A2 Other | Balconies used for floor-type activities with community access. | Same as areas providing access but not less than 4.0 | 1.8 | 750 |
| B Offices & work areas not covered elsewhere | | | | |
| | Balconies used for floor-type activities. | Same as areas providing access but not less than 4.0 | 1.8 | 750 |
| C Areas where people may congregate | | | | |
| C1 Areas with tables | Public, institutional & communal dining rooms & lounges, cafes & restaurants(5) | 2.0 | 2.7 | 700 |
| C3 Areas without obstacles for moving people | Corridors, hallways, aisles, stairs(2), landings(2), concourses, terraces, plazas etc not subject to wheeled vehicles. | 4.0 | 4.5 | 600 |
| | Corridors, hallways, aisles, stairs(2), landings(2) etc subject to wheeled vehicles, trolleys etc | 5.0 | 4.5 | 600 |
| | Balconies used for floor-type activities | Same as areas providing access but not less than 4.0 | 1.8 | 750 |
| C5 Areas susceptible to overcrowding | Assembly areas without fixed seating(6) (concert halls, bars, vestibules, public lounges, places of worship, shopping malls) and grandstands. | 5.0 | 3.6 | 650 |
| | Stages in public assembly areas | 7.5 | 4.5 | 600 |
| D Shopping areas | | | | |
| | Shop floors for the sale and display of merchandise. | 4.0 | 3.6 | 650 |

**AS/NZS 1170.1, Table 3.1 Notes - Design and Installation:**

(1) For AS/NZS 1170.1 T3.1 domestic & residential activities, 1.8kN concentrated action shall be applied over an area not less than 350mm$^2$ (Refer to Note 1, AS/NZS 1170.1:2002, Table 3.1); and, 2.7kN concentrated actions, shall be applied over an area not less than 0.01m$^2$ (Refer to AS/NZS 1170.1:2002, Cl.3.2(b)).

(2) Where a stair tread or landing is structurally independent of the adjoining elements, it shall be capable of withstanding a line load of 2.2kN/m of span of tread or landing. Boards shall be fully supported at stair treads or landings.

(6) Fixed seating is seating where the removal of the seating and the use of the space for other purposes is not likely.

Analysis Notes:

a) ULS strength combination 1.2G+1.5Q.
b) Design governed by serviceability deflection from concentrated action on a single board.
c) SLS deflections for distributed & concentrated actions G+$\psi$Q ($\psi$=0.7).

d) Recognition & acceptance of deflections is at the discretion of the designer/user.
Tabulated maximum joist spacings are based on:
SPAN/260, 2.7mm deflection for supports @ 750mm c/c for Q=1.8kN,
SPAN/200, 3.2 mm deflection for supports @ 700mm for Q=2.7kN
SPAN/180, 3.4mm deflection for supports @ 650mm for Q=3.6kN
SPAN/170, 3.2mm deflection for supports @ 600mm for Q=4.5kN
e) Floor vibration deflection limited to 2mm for 1.0kN point load & max. support spacing 750mm.
f) Modelled as 2-span continuous beam, each board supported on 3-joists.
g) Mean tested values of MOE and MOR with Material Reduction Factor = 1.1.
h) A Creep Factor of 4.0 is assumed. The long-term deflection from a significant concentrated action can be up to 4-times the short-term deflection and are best located over supports rather than at mid-span of the boards.

The analysis performed covers only those matters and products listed and excludes any other matter or product. The information presented in this report is valid for the shortest of the following periods:

- Until the product/system becomes modified in any way; or
- Until superseded by more recent technical information or by other certification; or
- Until *Installation Guide, V12.22* is superseded; or
- Until the particular referenced parts of the NCC are superseded in the NCC or in State or Territory Building Regulations; or
- Until the particular referenced Standards are superseded.

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for and on behalf of ACRONEM CONSULTING AUSTRALIA PTY LTD
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