



Project No: **CO1621**

Re: **Nissan Navara Upper Control Arm  
(BHU4981N)  
Finite Element Analysis Engineering Report**

Certification Number: **1621-20220809-01**

Prepared for:



on behalf of

**ROADSAFE**

Date: **09<sup>th</sup> August 2022**

09<sup>th</sup> August 2022

Troy Schipper  
Roadsafe  
10 Macbeth Street  
Braeside, VIC, 3195

**Project No: CO1621-1**  
**Navara Upper Control Arm (BHU4981N)**  
**1660kg increased front axle rating to VSB14**

Dear Troy,

As requested, we have assessed the Nissan Navara aftermarket upper control arm to VSB14 loads for an increased front axle rating of 1660kg using FEA analysis. This analysis was based on geometry provided by Roadsafe. Details of this design, the FEA analysis results for this arm and the physical test results for a correlation activity of a similar arm design are described in the following project data:

- Analysis Report: 1621-20220809-01
- Test Report: 1207-20211122-02

A brief overview of the upper control design is provided over-page.

Only the upper control arm design has been assessed and the remainder of the front suspension has not been considered as part of this analysis. Furthermore, this analysis only considers the VSB14 loads and is in no way an assessment of the overall durability or manufacturing quality.

Finite Element Analysis (FEA) and physical testing has been used to assess the performance of upper control arm design subject to loads and limits set out in the following reference documents:

- VSB14 "National Code of Practice for Light Vehicle Construction and Modification"

Based on the loading conditions and material properties used, the upper control arm design is considered to comply with the strength requirements of VSB14 for a maximum front axle rating of 1660kg under the following conditions:

1. The upper control arm aluminium parts of 250MPa capacity (min.) and the threaded adjuster/connector of 655MPa capacity, with nominal minimum dimensions as per the specification.
2. Full details of the analysis and results are provided in report 1622-20220809-01, while the details of the physical test carried out on a similar design arm are provided in report 1207-20211122-02.
3. Any other conditions or requirements specified in the most recent version of these reports must also be implemented

Kind Regards,

Brett Longhurst,  
Managing Director,  
Bremar Automotion Australia Pty Ltd

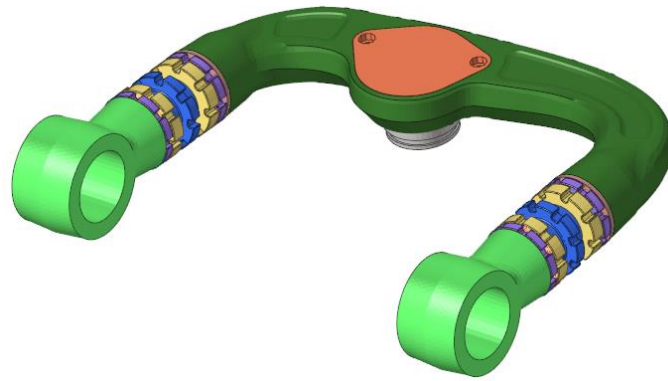


Figure 1: Upper Control Arm Design

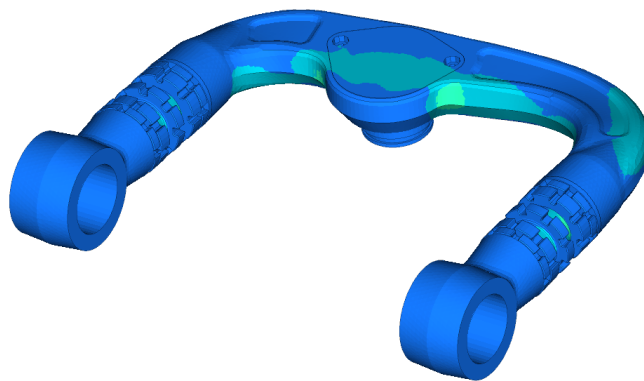


Figure 2: Upper Control Arm Mesh and Stress Contour

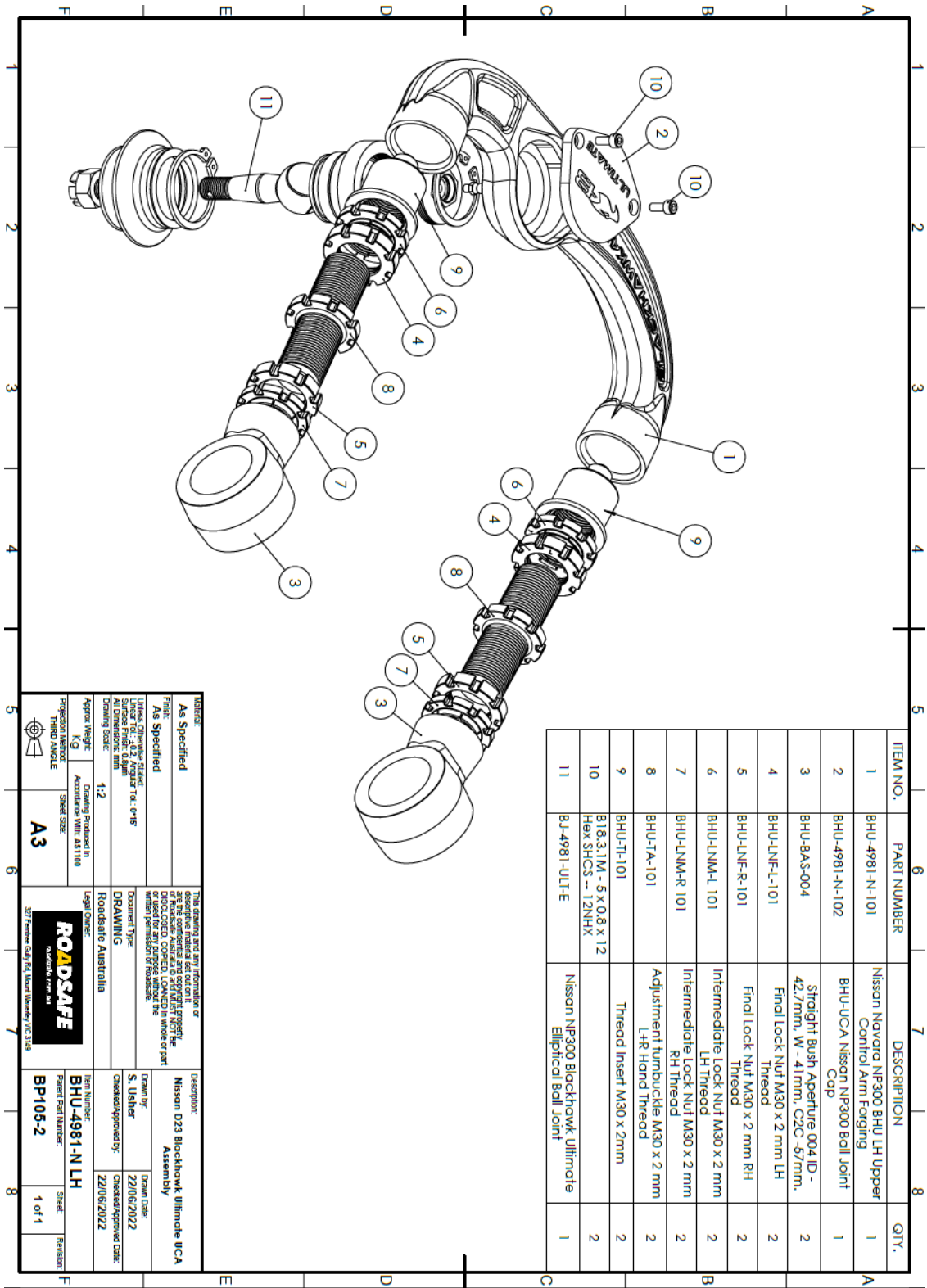


Figure 3: Upper Control Arm Details