Pre-approvals for Restricted Access Vehicles (RAVs)

Information kit

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Contents

1 Background

1.1 Pre-approvals for Restricted Access Vehicles

Under the Heavy Vehicle National Law (HVNL), local governments are expressly recognised in legislation as road managers.

The HVNL compels the NHVR to seek the consent of all road managers involved in a proposed permit route. Particularly for the "first and last mile" the road manager will often be a local government.

All State road agencies have established gazetted networks that identify routes available to OSOM vehicles and for movements beyond these routes then permits were typically issued by the state road agencies with a requirement to obtain approval from local government for local roads.

It would appear though that in many circumstances local governments were not engaged to provide permit based consent for the use of OSOM vehicles on their roads and that in some areas this reflects long standing practice. Therefore, for many local governments the provision of consents for OSOM permits was a new activity or would mean a significant increase in previous activity.

There was concern regarding the capacity of local governments to provide timely responses that allow permit applications to be processed within the time frames currently being experienced by industry.

In particular, mobile cranes require a capacity for very quick turnaround of permit applications often involving local roads. This has been supported by crane industry and jurisdictional feedback.

1.2 Pre-approved consents

To streamline processes, reduce administrative burden for local government and reduce turnaround times the concept of NHVR holding a pre-approved consent signed by a local road manager is being implemented.

To support this concept NHVR developed the "Pre-Approved Written Consent" form, the "Road Manager Pre-approval Process" document and the "OSOM Reference Vehicle Guide".

Three load carrying reference vehicles and five SPV reference vehicles are detailed in this guide. The reference vehicles are hierarchical in that a road suitable for the most onerous (Load Carrying 3 or SPV 5) reference vehicle will be suitable for other reference vehicles.

The NHVR paper titled "Comparison of Recommended Conditions of Permit Travel limits with All Terrain (AT) crane effects" discussing the history of OSOM mass limits and effects of All Terrain cranes has also been developed.

The Victorian Department of Transport and Plannning (DTP) identified, based on their own permit records and IAP data, key Victorian local government areas where there are large numbers OSOM movements. For some local governments, there may be around 2000 OSOM movements requiring approval annually.

This and similar information has been utilised, with the support of the NHVR and Local Government Associations, to progress the pre-approval concept in all participating jurisdictions.

1.3 Consideration of routes

The pre-approval process targets routes expected to experience large numbers of OSOM movements such as;

Roads in industrial areas and access routes connecting existing approved routes or state controlled roads to:

- industrial areas,
- heavy haulage, crane and construction equipment depots and storage yards,
- suppliers and manufacturers of large equipment/items,
- construction sites,
- major infrastructure sites such as power stations,
- ports and,

- mining/heavy industry sites.

1.4 Efficiency gains

When a permit application is received by NHVR for movement on a local road and that road is pre- approved by the road manager for the vehicle type the NHVR do not seek additional consent from the road manager before issuing a permit. NHVR will supply a copy of the permit to the road manager.

This process saves time and resources for the road manager in processing applications, assessing applications and responding to requests from the NHVR. Turnaround times are also reduced benefitting industry.

2 Reference Vehicles - (Reference: NHVR OSOM Reference Vehicle Guide)

2.1 Comparison of NTC Recommended Conditions of Permit Travel limits with All Terrain (AT) crane effects

In 1977 The National Association of Australian State Road Authorities (NAASRA) established a Special Task Group to develop uniform policies and limits for oversize/overmass (OSOM) vehicles.

The report “A Study of the Road Movement of Indivisible Items” was completed in 1981. Following the adoption of the 1981 report, a second report was produced in 1985, in which the special Task Group reviewed the recommendation made in the initial report and in 1995 The National Transport Commission (NTC) developed “Recommended Conditions for Permit Travel” (RCPT) based on the NAASRA study.

These recommendations were based on the effect of over mass vehicles on the Australian road network infrastructure and pavements. Structural considerations and the protection of bridges and pavements were the principal controls in determining allowable axle loads, axle group loads and gross mass limits

2.2 Pavement Considerations

The axle load limits in the NTC recommendation were determined using a method developed by the Australian Road Research Board (ARRB). This method is based on the assumption that a single axle, regardless of tyre size, number and spacing of tyres produces the same destructive effect as a Standard Axle (80kN) if it produces the same maximum surface deflection.

Please note that since the NTC recommendations were developed, regulation general access axle masses have increased from 5.4t to 6.0t for a single axle fitted with 2 tyres and from 8.5t to 9t for a single axle fitted with 4 tyres. Therefore, it is expected that OSOM vehicles operating within NTC axle limits would have comparable pavement effects to general access vehicles.

In some jurisdictions, AT cranes are permitted to operate at 12t on a single axle fitted with 2 tyres of 445mm section width, whereas the NTC recommendations requires tyres of at least 508mm section width.

2.3 Bridge Considerations

The axle group mass limits and gross mass limits for combinations of axle groups in the NTC recommendations were determined having consideration for bridges with a load capacity less than the MS18 design standard. At the time of the NAASRA study 45% of bridges on major roads in Australia were considered sub MS18 standard.

The NTC recommendations included loading that was considered suitable for following sub MS18 bridge design standards and allows travel over these structures without additional operating conditions such as low speed or centreline travel :

- NSW – 1927 DMR and 1938 DMR
- Victoria – 1926 A and 1936 A
- Queensland – A Class

- SA – 1910 Pre Highway
- WA – A
- Tasmania – Crusher train

The NTC recommended axle group masses limit the local stresses in bridge components to an acceptable level while gross mass control provided through axle spacing schedules for load carrying vehicles and the gross mass formula for non-load carrying special purpose vehicles (SPVs) provides protection of the main structural members of a bridge.

The NTC gross mass formula for SPVs up to 70 t gross mass is as follows:

The sum of the mass on each single axle and axle group in the distance "L" described below (including those from which the distance is measured) must not exceed the number of tonnes represented by the figure "M", and calculated as follows:

M = 3L+15, *plus* 1 tonne for each 100mm by which the greatest ground contact width in the distance exceeds 2.5m, *or minus* 1 tonne for each 100mm by which that ground contact width is less than 2.4m.

L is the distance in metres between:

(a) the centre lines of any two single axles; or

(b) the centre line of any single axle and the centre line of the furthest axle in any axle group; or

(c) any 2 axle groups, measured from the centre lines of the axles furthest apart from each other.

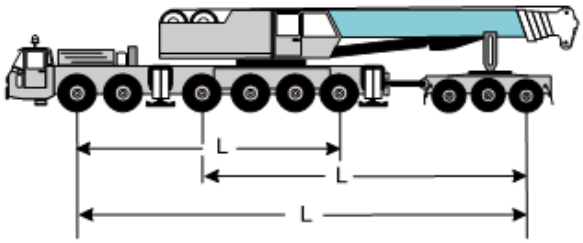

Illustration of "L" distances

In contrast, if the above formula is applied to a typical 4 axle AT crane (see following example), the NTRC allowable gross mass would be approximately 35t whereas the 4 axle AT crane has a mass of 48t. Travel of these cranes is likely to be subject to operational conditions such as low speed centreline travel on structures that NTC compliant cranes may cross unconditionally.

4 axle AT crane - total mass 48t (12t per axle)

2.4 Summary

The pavement and bridge effects of load carrying and special purpose vehicles complying with NTC Recommended Conditions for Permit Travel are comparable to or less than the effects of a typical All Terrain crane.

As allowable axle mass is controlled by tyre section width the pavement effects of NTC compliant vehicles is comparable to or less than (under Victorian operating conditions) the pavement effects of a typical All Terrain crane.

NTC axle group mass and gross mass limits for both load carrying and special purpose vehicles allow unconditional travel over bridges with a load capacity less than MS18 standard. In contrast a typical 4 axle all terrain crane may only be able to cross the same bridges with low speed travel (to reduce impact effects) and centreline travel (to restrict loading in bridge members) conditions.

Therefore, roads and structures assessed as suitable for the operation of typical All Terrain cranes are considered suitable for the operation of less onerous NTC Recommended Conditions for Permit Travel compliant load carrying and special purpose vehicles.

Note:	The above applies to mass considerations only and route assessments may be required for movement of oversize vehicles and loads.

3 Road manager pre-aproval process

3.1 Identification of Routes

1. Identify origin/destinations for RAVs, for example;
    a. Industrial areas
    b. Heavy haulage, crane, construction equipment depots and storage yards
    c. Suppliers and manufacturers of large equipment/items
    d. Construction sites
    e. Major infrastructure such as power stations
    f. Ports
    g. Mining/heavy industry sites
2. Identify pre-approved routes/ State controlled roads in vicinity of sites identified in Step 1.
3. Identify preferred access routes from sites identified in 1 to routes/roads identified in Step 2.

3.2 Assessment of Routes

1. Assess suitability of routes, identified in Part 1 Step 3, for reference vehicles listed in NHVR OSOM Reference Vehicle Guide having regard to the following;
    a. Dimensional requirements for each reference vehicle
    b. NHVR document “Comparison of NTC Recommended Conditions of Permit Travel limits with All Terrain (AT) crane effects”
    c. Hierarchy of reference vehicles, carry out initial assessment for SPV 5 and Load Carrying 3 reference vehicles. If route suitable for these vehicles should be suitable for other reference vehicles.
    d. If route is unsuitable for a particular reference vehicle, reassess route for lower level reference vehicles. (No pre-approval If route unsuitable for any of the reference vehicles)

2. From assessment, identify highest level SPV reference vehicle and highest level Load Carrying reference vehicle that may use each route identified in Part 1 Step 3.

3.3 Documentation

1. Complete a NHVR Pre-Approved Written Consent form for each Approved Reference Vehicle/s and attach approved routes for that particular vehicle/s. (Note: Preferred route identification is through use of NHVR Journey Planner references)
2. Submit completed form to NHVR email address RM.Enquiries@nhvr.gov.au.