	Interim Advice Note			Section		Design	
				Status		Final	
				Reference		PMC-IAN-DES-016	
				Revision	1	Date	23/06/2014

INTERIM ADVICE NOTE LRDP 016

Future Proofing of Rural Roads

Project: Local Roads and Drainage Programme

IAN#: PMC-IAN-DES-016

Date: 24/03/14

To: *All General Engineering Consultants*

SUMMARY

This Interim Advice Note outlines an amendment to the LR&DP Design Management Manual (DMM) and addresses the considerations and provisions to be given to Rural Link Roads located within the LRDP.

INSTRUCTIONS FOR USE

This Interim Advice Note takes immediate effect. It is applicable on all candidate LR&DP projects and also those managed LR&DP projects that have not yet achieved Gateway 3 approval within 90 days of issuance.

Manager of Road Design Department

Attachment

Appendix:

Appendix A - Amendment to DMM

**Appendix S – MMUP Acceptance Letter & Cross Section
Location Map**


Received by Design Consultant / Contractor

Organization _____

Contact Person _____

Signature _____

Date: / /

	Interim Advice Note			Section		Design	
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1. Introduction

- 1.1. This Interim Advice Note (IAN) provides guidance for the Future Proofing of Rural Arterial Roads. Due to the dynamic conditions within the State of Qatar, and to the limitation of construction materials, PWA has taken a position that allowances are incorporated within all designs for Rural Roads to ensure that widening can be undertaken in the future with minimal cost and disruption to the network.
- 1.2. A Technical Briefing Note was (TBN) developed by KAWSP with input from Hyder, AECOM and the PMC. This information outlined proposals and consideration to be taken to ensure widening of rural roadways could be undertaken if required in the future. This information was presented to PWA Infrastructure Affairs, Acting Head of Road Design Department - Abdullah Ahin on May 11th. Additional input arising from the meeting has been incorporated with the KAWSP TBN to produce this IAN.

2. Withdrawn / Amended Standard

- 2.1 This IAN is an Amendment to the DMM, Volume 2, May 2014.

3. Implementation

- 3.1 The IAN is to be used with immediate effect on contracts as follows:
 - All LR&DP projects in Concept Design Stage
 - Other projects specifically directed by PWA
- 3.2 If in doubt, GECs should seek guidance from the Ashghal LR&DP PMC (PB), on a project-by-project basis.
- 3.3 A location map is included for additional reference

4. Contact for Technical Queries

- 4.1 All technical queries on this IAN should be directed to Richard Henke (PMC Technical Director) at the following address:

Parsons Brinckerhoff
 Floor 5, Faisal Tower 2, West Bay
 P.O. Box 23013
 Doha, Qatar
henke@pbworld.com

Appendix A
AMENDMENTS/ADDITIONS TO
LR&DP Design Management Manual (May 2014)
Vol.2, Section 4.0 Local Street Design Practices

4 LOCAL STREET DESIGN PRACTICES

Insert after last paragraph of section 4.2 as follows:

4.3 Future Proofing of Rural Roads

Unless specifically directed by PWA all rural arterial road projects shall include provisions for future upgrade and widening of the carriageway, (also known as future proofing). For this future proofing exercise, the GEC shall consider all elements of the carriageway including:

- Future Widening Strategy
- Earthworks
- Culverts
- Surface Water Drainage
- Right of Way width and Buffers
- Design Speeds
- Rest Stops, Bus and Emergency Facilities
- Lighting
- Structures
- Utilities

Future Widening Strategy

Consideration must be given to provide facility to widen the carriageway in the future whilst minimising impacts to ramps and junctions, minimizing cost to PWA and disruption to the network.

There are two design approaches for future widening

- Widening from the Median
- Widening from the Verge

Currently MMUP cross sections indicate future provision for widening from the verge and is the preferred strategy at this time. However, the designer should consider the advantages and disadvantages of both strategies as it relates to any particular project. Some Positives and Negatives for each approach are given below in Tables 4-4 and 4-5 for consideration.

Table 4-4: Widening from Verge Advantage/Disadvantages

Widening from Verge	
Positives	Negatives
Reduce volume earthworks slopes, reduced capital expenditure at second stage design (D2)	Increased cost of remedial works at D3 stage, intricate widening of earthworks requiring benching, etc. adjacent to live traffic
Reduced length of verge RRS barrier	Verge RRS barrier requires future relocation to accommodate 3 rd lane
Lighting costs reduced	Central median lighting requires upgrading at D3 stage
Lower initial capital cost at opening of D2 configuration	Higher overall cost at adoption of D3 configuration
Reduced impact on Detail design programme	
D3 design accommodates actual traffic flows rather than speculative.	
	Junctions require remodelling at D3
	All verge ITS requires relocating at D3 stage. Significant impact on ITS network and TM
	Verge signs require relocation to accommodate 3 rd lane
	Structure and culverts require extending accommodate D3 configuration. Wing wall require reconstruction. <i>Mitigation:</i> structure and culverts can also be built to D3 configuration at D2 stage, but with additional cost.
	Verge widening may result in joints in wheel tracks. <i>Mitigation:</i> break back hard shoulder during widening to set joint outside wheel track, or provide wider hard shoulder at D2 stage.

Note: Example only – The designer should add his own considerations on a project specific basis.

Table 4-5: Widening from Median Advantage/Disadvantages

Widening from Median	
Positives	Negatives
Earthworks completed in one hit	More extreme earthworks solution needed increasing capital expenditures at D2
Verge and median RRS barriers retained at future widening	Over-specified verge RRS barrier at D2 due to extreme earthworks solutions.
Structures and culverts accommodated D3 configuration	Increased cost of structures and culverts
Lighting appropriate to D3 configuration	Over-specified lighting at D2 stage
Junctions accommodate D3 configuration	
ITS in correct position for D3 at no additional cost in D2 stage or subsequent D3 configuration	
Verge signs in correct position for D3 at no addition cost to D2 stage	
Lower overall project cost at adoption of D3 configuration	Higher initial capital cost
	Additional maintenance requirement for D3 elements over-specified at D2: <ul style="list-style-type: none"> • Earthworks retaining measure • Lighting • RRS barrier • Structures • Culverts
	Increase duration to Detail Design programme as a result of re-design
	Speculative solution for future needs

Note: Example only – The designer should add his own considerations on a project specific basis.

All highway layout plans issued to third party stakeholders must indicate the location of future second/third lane and position of proposed and future containment drainage ditches. This is required to ensure that PWA RoW is protected.

GIS data for submittal to PWA as required in GIS/CAD Manual must contain outline positioning of future second/third lane and future containment drainage ditch locations. This is required to ensure that PWA RoW is protected.

Earthworks

Earthworks for provision of second or third lane in the future can be provided in two ways:

- Provision of over wide embankment at initial construction
- By future widening of embankment

The preferred strategy is to widen the earthworks in the future should the need ever arise. This would defer related cost without incurring significant abortive works.

Culverts

The length of culverts should be sufficient to accommodate future carriageway upgrades. Culvert wingwalls could be designed to run parallel to the carriageway to ensure that they do not impede access to third party utility corridors

Designer must take all steps to ensure that construction and earthworks cover to culverts is kept as low as possible to avoid excessive fill requirements. The use of multiple smaller diameter culverts is preferable to single large diameter pipe which will require far more fill material for embankments.

Surface Water Drainage

Rural arterial roads are generally isolated from urban areas and MMUP cross sections allow for surface water drainage to run off into desert areas. To allow for any future development adjacent to the carriageway, the designer must make provision for the introduction, at a later date, for construction of cut-off drainage containment ditches.

However, in cases where discharging to adjacent third party land may cause a problem for the landowner then the construction of cut-off drainage containment ditch should be immediately included in the design.

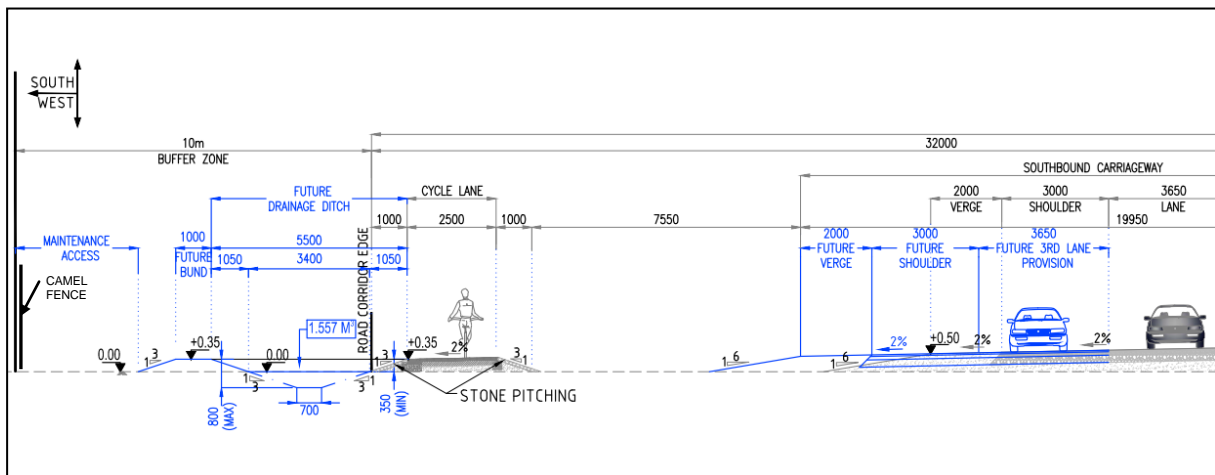
In consideration for the provision of such facility either immediate or in the future, the designer must also consider the positioning away from utility corridors. An example solution would be to provide a buffer zone adjacent to the Right of Way (RoW).

Right of Way widths and Buffer Zones

Right of Way widths are determined by the MMUP but additional width is available through the acquisition of buffers. The agreement with MMUP (see Appendix S) for the provision of buffer zone adjacent to rural arterial roads is intended to be able to provide PWA a corridor reserved for future provision of a drainage containment ditch. Also included in Appendix S is the cross section approved by MMUP and the proposed utility corridor.

Figure 4-1 contains an example of a typical cross section for a Rural Arterial Road that the designer may consider that includes a 10m buffer zone for the provision of future drainage containment ditch and a maintenance access road.

Figure 4-1: Sample Typical Cross Section for Rural Arterial with Buffer Zones



Design Speeds

The addition of a future lane may alter the future road classification and posted speed. Roadway design (both horizontal and vertical) should take into account the future posted and associated design speed. Due to this fact, all rural arterial roads (including rural arterials not subject to future proofing) shall be developed to a 140kph design speed. Where existing

RoW is insufficient to accommodate a 140kph design speed, the design must be developed to indicate the extra land required for presentation for PWA approval.

Rest Areas, Bus and Emergency Facilities

The provision of rest stops for drivers should be considered by the designer. Rest area may also be used as possible view points to surrounding area or as drop off/turn around points for those using the cycleway.

Consideration should be given to the positioning of cycleway/camel underpass close to rest areas. This would then provide leisure cyclists a cross over point as part of a circular route to/from a village.

Adequate shaded areas should be provided at rest areas. Landscaping should be 'hardscape' only unless there is a suitable supply of TSE available.

Mowasalat bus stop requirements must be agreed on all rural arterial roads.

Provision must be provided for the location of Ambulance or other emergency service stations when required by the third party stakeholders.

Lighting

Over lighting of existing carriageway to allow for future widening shall not be permitted. Lighting columns should be designed such that replacement upgrade lamps is all that is needed for future widening, i.e. designs should be such that repositioning of lamp columns will not be required for future widening. Lighting of rural cycleways are addressed in section 17.8

Structures

Widening of structures such as at grade separated underpass or camel/cycle underpasses will be complex and expensive to alter at a later date. For this reason, all structures should be built over wide at the initial construction.

Where camel fencing has been proposed by the designer, it is recommended that the fencing is located to the outside edge of any buffer zone.

Utilities

Third party utilities should be located outside of any future traffic lanes. If need be PWA utilities such as TSE or Surface Water may be located within the future traffic lanes.

Appendix S
ADDITIONS TO
LR&DP Design Management Manual (May 2014) Vol.2,
Appendices

Ministry of Municipality and Urban Planning
Transportation & Infrastructure Planning Dept.



وزارة البلدية والتخطيط العمراني
ادارة تخطيط النقل والبنية التحتية

Date : 26/05/2014



163583/2014

Saoud Ali Al Tamimi
Manager of Road Projects Department
Public Works Authority
PO Box 22188
Doha Qatar

Subject : Typical Cross-Section for Link Roads of QN006, QN078, QN079 and QN083

Dear Mr. Al Tamimi,

Reference is made to your letter No. 2014/0003754/5 dated 3rd March 2014 received by Ministry of Municipality and Urban Planning (MMUP) under Ref. No. 74330/2014 dated 9th March 2013 (copy attached) and subsequent meetings held with your Project Management Consultant (PMC) as well as your General Engineering Consultant (GEC) on the matter of developing Typical Cross sections for the subject link roads and requesting MMUP's initial approval.

The Transportation and Infrastructure Planning Department (TIPD) of MMUP would like to inform you after numerous meetings and deliberations that a Typical Cross Section pertaining to the utility distribution had been reached, please refer attached drawing indicating the agreed utility distribution corridor between MMUP and your PMC. The said cross section has been developed as result of the following facts and constraints:

1. Agreement has been reached between TIPD and Ashghal for a future extra lane in each direction.
2. Currently there are no existing and planned utilities along the above mentioned Link Roads.
3. The future demand for utility corridor is foreseen to be very little from planning prospective.
4. Additional buffer of 10m shall be added (pending Urban Planning Department's approval). This buffer can be used by Ashghal or by other utility agencies pending future demands of services.

To this end, we hope the above suffice your current need to proceed with your scheme and if you require further assistance please do not hesitate to contact us on 4426 5305.

Yours Sincerely,

Ibrahim Abbas Hassan

