



**SUBMISSION TO THE TELECOMMUNICATIONS AUTHORITY OF BAHRAIN  
(TRA)**

**BY**

**BAHRAIN TELECOMMUNICATIONS COMPANY  
(BATELCO) BSC**

**ON**

**TRA STUDY ON THE REGULATION OF WHOLESALE BROADBAND MARKET**

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*in this document [•] indicates information removed due to confidentiality*

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## 1 Executive Summary

Batelco submits that it is not appropriate, proportionate nor necessary for the Telecommunications Regulatory Authority (TRA) to mandate Local Loop Unbundling (LLU) in the Kingdom of Bahrain. As Batelco demonstrates below in our response to the Study on the Regulation of Wholesale Broadband Markets (Study Paper), Batelco considers that:

- LLU is becoming an outdated remedy to a legacy network issue. It is no longer appropriate or necessary to mandate LLU in an emerging Next Generation Network (NGN) world. Bahrain should not simply implement regulations that were introduced in other parts of the world over 10 years ago. The telecommunications markets of 2009 are very different and regulators around the world are responding by ensuring that regulation drives the rollout of broadband technologies and broadband penetration. Batelco submits that this should also be the primary concern for the TRA.
- Batelco submits that provision and regulation of bitstream will be suitable for the interim period that broadband access over legacy networks will be required in Bahrain. A focus on bitstream and an emphasis on commercially negotiated outcomes will achieve the TRA's outcomes for Bahrain. To alleviate any remaining concerns that the TRA may have over regulation of bitstream instead of LLU, Batelco considers that it may be appropriate to review the regulatory structure in 24 months after the implementation of bitstream. It will be at this time, in 2011, that the industry will be effectively able to assess the impact of the emerging NGN world and determine whether LLU is required or whether, in fact, bitstream is providing greater benefits to the Bahraini telecommunications industry.
- The bitstream product is superior in Bahrain for several reasons. These include that (i) LLU is not suitable for a micro-economy such as Bahrain and there is no business case for such a product; (ii) bitstream is more economically feasible in residential markets; (iii) bitstream has superior speed of market entry; (iv) bitstream has lower upfront capital costs; (v) bitstream has lower churn-associated costs; (vi) bitstream has lower service provisioning delays; and (vii) bitstream is superior in difficult economic times.
- Our response to the Study Paper argues that in many European economies it is bitstream and not LLU that has had greater initial demand and take up. This is important in 2009 as we are only a few years away from NGNs. Additionally, several smaller economies recently mandated bitstream only initially for the period that Batelco considers it will be necessary and appropriate in Bahrain.
- Finally, Batelco argues that the TRA has not provided adequate evidence of a proven pent up demand for LLU in Bahrain and, if required to be implemented, Batelco is expected to incur substantial up front capital and operating costs investing in another access product. Where there is any demands for unbundling Batelco's 200,000 PSTN lines, Batelco anticipates this will be at a very limited number of service nodes, [•] rather than being for the benefit of the whole population in Bahrain, especially in outlying villages.

Given these reasons we urge the TRA to mandate only bitstream. This is particularly the case since lower broadband prices and higher speeds are expected to be provided shortly as a result of Batelco's retail tariff proposals and the TRA's Draft RAO Order. Regulation of LLU is not appropriate, proportionate or necessary for the Kingdom of Bahrain especially given proposed new bitstream prices in the Draft RAO order and the speeds being contemplated for launch at this time.

## 2 LLU is becoming an outdated remedy for an old regulatory environment that is no longer appropriate or necessary

In 2009, the public switched telephone network (PSTN) legacy networks are beginning to decrease in importance with regulators across the world starting to roll back regulation for these networks. Alternatively, regulators are now implementing regulations in preparation for the emergence of the NGN environment. We submit that LLU regulation is becoming an outdated remedy and is no longer appropriate or necessary for Bahrain, especially as Batelco has recently announced the completion its NGN core network roll out. The TRA should only implement

regulations that are strictly necessary in preparation for an NGN environment and not for regulation of a PSTN environment.

## 2.1 LLU is an inappropriate regulatory remedy in an emerging NGN world

TRA is at risk of falling behind in telecommunications regulation by simply copying what has been done elsewhere without examining the current context in Bahrain. Whilst LLU was implemented in many countries around the world in the mid to late 1990s, countries that have considered this issue in more recent years have decided to regulate bitstream instead of, or at least prior to, the introduction of LLU.

The **Study Paper** seems to proceed on an assumption that as the European Union (EU) implemented LLU, Bahrain should follow suit. However, the Study Paper does not examine, nor even mention, that this regulatory action in the EU took place over 10 years ago, nor does it look at the learnings from that regulatory action. Less still does it look closely at the realities of Bahrain's telecommunications sector in 2009. Batelco respectfully submits that it is inappropriate to implement regulatory reform in this manner without properly analysing current and future market conditions and where the real demand (for broadband and other services) will arise from in the future.

The following table highlights that LLU is a remedy that was introduced in many countries almost 10-15 years ago.

**Table 1 – Dates of implementation of LLU**

Date of LLU Implementation	Countries
1995	Hong Kong <sup>1</sup>
1996	USA & Germany
1997	Canada, Japan, Netherlands & Finland
1998	Austria & Italy
1999	Australia
2000	EU including Luxemburg, Portugal, Spain, Sweden & UK

In the last 10 years, telecommunications markets have developed and altered in substantial ways. The primacy of the PSTN network has been greatly eroded (or is being refined) by a global desire to drive and increase the rollout of broadband technologies and increase broadband penetration. It is well established that increased broadband penetration and services enables the development of an advanced, information-based society which in turn leads to increased productivity for a nation.

The benefits of access to broadband is reflected in the WSIS Declaration of Principles, which highlights the social, economic and overall well-being of communities and individuals that can be derived from broadband availability.<sup>2</sup>

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<sup>1</sup> Hong Kong no longer mandates LLU.

*A well-developed information and communications network infrastructure and applications, adapted to regional, national and local conditions, easily-accessible and affordable, and making greater use of broadband and other innovative technologies where possible, can accelerate the social and economic progress of countries, and the well-being of all individuals, communities and people.*

To ensure that the TRA meets the objectives of the National Telecommunications Plan including to:

*ensure that Bahrain continues to play a leading role in the Gulf Region as an attractive option for living, working and investing,*

the TRA will wish to ensure growing broadband rollout and penetration in Bahrain.

Batelco submits that by regulating LLU, the TRA risks restricting the telecommunications market as if the past is the future. The TRA needs to regulate for the emerging telecommunications market of broadband and NGNs and not for legacy PSTN networks.

From a technical perspective, it would be expected that if an NGA were deployed, using fibre to the kerb or fibre to the street cabinet, there would be no need for an MDF. Full LLU, as currently contemplated in this consultation, is envisaged at the MDF, taking into account copper and PSTN architecture. There is a risk for investors that if NGA is introduced, investment made by both access seeker and access provider in LLU will be stranded. This, Batelco submits, would undermine a trend where customers acquired on LLU would be able to migrate over to fibre because of the cost of acquisition in the first place would be unsustainable.

Regulation for NGNs not PSTNs has been adopted by the OECD:<sup>3</sup>

*The development of fibre networks requires that those regulators that have mandated local loop unbundling (LLU) should assess the economic and technical feasibility of continuing LLU policies in their country, taking into account investment plans of the incumbent, the presence of alternative network infrastructures, and the characteristics of particular markets, amongst other things, in order to begin to determine the best regulator framework to ensure effective competition.* (Emphasis added).

It has also been highlight by several commentators:<sup>4</sup>

*...the regulatory approach that applies to the legacy, copper-based, circuit-switched world is not applicable in the NGN environment...attempting to map the old regulatory world onto the new technology is an inappropriate response... the upstream market for applications and services can thrive as long as there is workable competition in the NGN access network and that it is at this level where a regulatory intervention is appropriate, if intervention is required at all.* (Emphasis added).

Nicholls also stated:<sup>5</sup>

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<sup>2</sup> World Summit on the Information Society, *Declaration of Principles Building the Information Society: a global challenge in the new Millennium*, 12 December 2003, at para 22.

<sup>3</sup> OECD, Working Party on Communication Infrastructure and Services Policy, *Convergence and Next Generation Networks*, 29 April 2008, at page 23.

<sup>4</sup> Nicholls R., *Pedestrian Crossing and Superhighway Robbery: Sources of Market Power in Broadband*, July 2008, at page 2.

<sup>5</sup> Nicholls R., *Pedestrian Crossing and Superhighway Robbery: Sources of Market Power in Broadband*, July 2008 at pages 5 and 10 respectively.

*There is a significant risk that using existing regulatory models will hamper the development of a market for applications and services which are delivered using broadband. That is, there is a risk of regulatory intervention before any market is created in which there may be market power.*

*This means that some regulatory assumptions have to be unlearned. Whereas ULL is an important element of access network competition in the legacy circuit switched world, it is not clear that such unbundling has any application in an NGN or in the approach to its regulation. (Emphasis added).*

We note that Batelco has not yet announced plans for investing in NGN technologies. Batelco submits to the TRA that it would greatly assist Batelco's business case for such investment if the TRA were to provide more certainty concerning the regulatory treatment of NGN technologies. Given that the ladder of investment theory has been stated by its author to not apply in an NGN environment, Batelco considers that the introduction of LLU in Bahrain at the current time will only create more uncertainty and that such uncertainty will constrain the effective development of a NGN in Bahrain and the economic benefits that such development will bring.

## **2.2 The ladder of investment theory is unworkable in an NGN environment**

In the Study Paper, the TRA utilises the 'ladder of investment' theory to illustrate why LLU is necessary in Bahrain.<sup>6</sup>

The ladder of investment theory states that as long as efficient infrastructure based competition is considered to be the most preferable outcome from any long term regulatory intervention, then entrants can be encouraged and directed towards infrastructure based competition by being provided with temporally limited access to services and facilities of the incumbent. The concept's core premise is that entrants should be encouraged to climb the rungs of a ladder by being granted access to increasingly less bundled network services and elements and by removing the rung below their current position to encourage upward movement.

Given the shift away from traditional technologies, and legacy networks Batelco considers that it is inevitable that the rungs of the ladder of investment will also shift towards ensuring that NGN access is secured. As such, it is inappropriate and unnecessary to regulate based on the 'traditional' rungs of the ladder of investment.

Many leading academic and industry commentators are of the view that the ladder of investment theory is unworkable in an NGN environment. Indeed, the founder of the ladder of investment concept and chairman of the independent TRA review panel in the Kingdom of Bahrain in 2005 and 2006, Martin Cave, has recently expressed some doubt as to whether the ladder concept applies in today's broadband markets. He states that regulators around the world have applied it:<sup>7</sup>

*..despite the fact that the ladder of investment theory remains no more than a hypothesis, as scientific testing of an imprecise proposition of this kind remains problematic. (Emphasis added).*

He considers that:<sup>8</sup>

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<sup>6</sup> TRA, *Study on the Regulation of Wholesale Broadband Markets*, 26 March 2009, at page 10.

<sup>7</sup> Cave M., *Applying the ladder of investment in Australia*, 2008, at page 1.

<sup>8</sup> Cave M., *Applying the ladder of investment in Australia*, 2008, at page 6.

*This apparent success of the European model is, however, overshadowed by doubts about whether the ladder approach can be maintained in the same or a similar form as next generation access (NGA) networks are installed. The architecture of such networks differ from those of the PSTN, creating different opportunities for unbundling them...This places greater emphasis in the future on the importance of promoting competition between end-to-end networks, as against the access-based model [of the ladder of investment theory]. (Emphasis added).*

The European Telecommunications Network Operators (**ETNO**) group are particularly critical of the ladder of investment concept:<sup>9</sup>

*The 'ladder of investment'... is not a suitable concept for explaining competitive dynamics and for justifying regulatory intervention in today's broadband markets...[it] does not provide a solution on how to encourage investment in alternative and/or new infrastructure. (Emphasis added).*

ETNO have further argued that the ladder does not address the complex challenges facing the market place and regulators today. National Regulatory Authorities (**NRAs**), some of which introduced LLU several years ago, are now faced with calls for action on all 'rungs' of the ladder – for de-regulation on the one hand and for continuous intervention in favour of specific business models on the other. The fact that alternative operators are active on all levels of the value chain complicates any management of a ladder approach for the regulator.<sup>10</sup>

In conclusion ETNO stated:<sup>11</sup>

*This points to a general weakness in the ladder concept: where entrants invest in assets following an NRA commitment to a regulatory strategy, NRAs feel obliged to protect the investment made even if regulation is no longer justified or if this original regulator decision that led to market entry was wrong. ... the concept of the ladder is overly interventionist as it is aimed not only at removing obstacles to competition in a given market but also at actively intervening to structure the market and thereby determine the business strategy of market players. (Emphasis added).*

Nicholls agrees with ETNO and considers that the regulatory focus needs to change so as to recognise that the deployment of the NGN represents a paradigm shift for operators and should also represent the same for regulators. He has argued:<sup>12</sup>

*Regulators should abandon the current ladder of investment models and replace their regulatory approach through returning to the statutory principles which guide them. In many cases, this will mean that regulators will need to consider how to promote competition in the provision of NGA. As a result, the ladder of investment may well be shortened to resale/bitstream/competitive facilities. (Emphasis added).*

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<sup>9</sup> ETNO, *ETNO Reflection Document on re-assessing the "ladder of investment" in the context of broadband access regulation*, September 2005, at page 4.

<sup>10</sup> ETNO, *ETNO Reflection Document on re-assessing the "ladder of investment" in the context of broadband access regulation*, September 2005, at page 5.

<sup>11</sup> ETNO, *ETNO Reflection Document on re-assessing the "ladder of investment" in the context of broadband access regulation*, September 2005, at page 6.

<sup>12</sup> Nicholls R., *If you step on this rung you may lose your balance: Is bitstream the highest spot on the ladder of investment?*, June 2008, at page 11.

### 3 Bitstream is preferable for the interim period in which it will be necessary

Broadband and NGNs are increasingly becoming the focus of communications regulators around the world. Traditional regulatory structures and remedies do not naturally apply to this emerging world of broadband and NGNs. Regulators around the world are having to adapt and shift regulatory remedies to ensure their regulatory systems continue to allow for the development and growth of the countries communications sector.

Bahrain's development to an information based society with broadband and NGNs is currently emerging. A recent ITU ICT readiness report placed Bahrain in a respectable 42<sup>nd</sup> place out of 154 countries in terms of ICT readiness.<sup>13</sup>

[•]

We consider that, within the size constraints of the market, competition is and will develop apace taking a prospective approach to competition development.

Batelco thus considers that as Bahrain is starting to head down the path of broadband and NGNs it is now inappropriate and unnecessary to mandate LLU.

At the point when the TRA was considering LLU or bitstream as a solution in its Strategic Review consultation 19 months ago, Batelco emphasised:

*“there is a need to re-evaluate priorities in the next phase covered by the Strategic Review and beyond by boosting investment incentives for both the incumbent and new entrants prepared to roll out facilities and not, as the LECG paper<sup>14</sup> suggests, create conditions where the sector “finds itself in a DSL cul-de-sac”*

This was because of the following factors, all of which are relevant, if not more so today:

- the emergence of alternative networks in the Kingdom through wi-fi mesh networks, wimax networks and metropolitan based networks;<sup>15</sup>
- the immediate need to provision areas of new development on existing or reclaimed land;
- decisions needed to be taken by Batelco on whether or not to extend or upgrade its NGN through fibre to the kerb and make other investments in the Kingdom's fixed infrastructure;
- the desirability of facilities based or inter platform competition over the medium term rather than the more short term stimulus of intra-based competition;
- four reference offer orders in the space of 12 months;<sup>16</sup> and

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<sup>13</sup> ITU, *Measuring the Information Society: the ICT Development Index*, 2009, at page 32.

<sup>14</sup> LECG paper - Access Regulation and Infrastructure Investment in the Telecommunications Sector: An Empirical Investigation Waverman, Meschi, Reiller and Dasgupta September 2007. The paper considered a hypothetical country with 1 000 000 people and no population growth where broadband penetration was 10 per cent, with 20 per cent of those taking broadband through an alternative access technology. They found that a 10 per cent fall in LLU prices resulted in an increase in penetration of just over 11% (100 000 to 110 000 subscribers). The share of subscribers using alternative access platforms falls to 18 000 from 20 000 (16.4 per cent).

<sup>15</sup> Zain and Mena have now launched their wimax networks, STC is to enter the mobile market within approximately 10 months, new national and international fixed infrastructure deployment is taking place. See also our comments on the proposed wholesale markets dominance determination. ;

- the inherent riskiness of investment in new technology in a relatively small market.

Batelco understands that access issues remain the concern of any regulator whilst competition develops. However, Batelco submits that the TRA should regulate bitstream only at this given point and combine this with an emphasis on commercially negotiated, not mandated access outcomes.

There are also a number of current access initiatives taking place which also impact on a decision to move forward with implementation of LLU:

- review of the non-price terms of the reference offer and in particular review of the facilities access schedule and bitstream schedules in terms of processes, SLAs, forecasting and provisioning requirements;
- proposals (discussed at an OLO's meeting on 27 November 2008) to introduce the several access products during 2009 in addition to LLU. These products could be MPLS, dark fibre and international facilities access;
- proposal to revise carrier pre-selection and introduce carrier selection this year;
- further work improving operational procedures for the working of the Telecommunications Technical Office to facilitate the self provision of fixed network infrastructure; and
- issue of a draft RAO order on 31 March 2009 for bitstream and wholesale DSL resulting in significant below cost reductions in proposed prices and with significant measures for non-price terms. This includes removal of the minimum order requirement for other licensed operators; requirement to introduce automated provisioning for bitstream; updated process diagram requirements for approval; and requirement to supply all speeds up to 20 Mbits/s on reasonable request regardless of provisioning at the retail level.

The cumulative regulatory impact of these multiple initiatives in relation to active and passive remedies has to be assessed in any study supporting the introduction of LLU. Given that the study does not address these matters and in reality the introduced initiatives have to settle into order to assess the impact, Batelco considers that bitstream (as proposed to be revised in 2009) is proportionate and a reasonable balance between costs versus the benefits to provide access for the interim period that it will be required by access seekers. It will be an interim period as the development of broadband and NGNs in Bahrain will increasingly make unbundling unnecessary.

As such, and given the current developing market in Bahrain, Batelco considers that only regulating bitstream for now is an appropriate and necessary step. It will also be a proportionate response to any perceived market failure by the TRA.

To alleviate any remaining concerns and in line with the international experience (as detailed below in section 4), Batelco submits that it may be appropriate to review the regulatory structure in 24 months after the implementation of bitstream. At this time, the TRA will be able to assess whether bitstream has been successful in correcting any perceived market failures. The TRA will also be able to assess the regulatory framework against the development of broadband and NGNs in Bahrain and determine whether LLU is actually still an appropriate and necessary response in Bahrain's telecommunications market.

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<sup>16</sup> Intense access regulation continues. In addition to the draft LLU access order in this Consultation, Batelco received a draft RAO order relating to WDSL and bitstream issued on 31 March 2009 which in response to a Batelco retail tariff proposal initiative proposes to deliver higher speeds at significantly lower prices across all speeds.

International experience shows that bitstream, and not LLU, will provide greater benefits to the Bahraini telecommunications industry and end-users for the period it is required in Bahrain.

### 3.1 Bahrain is a micro-economy

The size of the market in Bahrain should at all times affect how and when regulation is applied and to determine which “appropriate and necessary” remedy should apply to address market failure. Bahrain’s population is approximately 39 times smaller than Saudi Arabia, 92 times smaller than Iran and 84 times smaller than the United Kingdom.

Batelco submits that the current regulatory environment already mirrors key aspects of the European Union regulatory framework and that the TRA proposes to further replicate European remedies by mandating LLU. By doing so the TRA is ignoring important factors identified in a joint Ovum Independent Paper “Applying the EU Regulatory Framework in ‘microstates’”, such as:

- increased importance of regulators making an appropriate trade off, between competition and other factors in maximising economic and social welfare. In particular there is a much stronger need to balance competition against productive efficiency;
- limitation of the prospects for competitive entry at efficient access prices in “microstates” more than in “macro states”;
- increase in the importance of discouraging inefficient entry. A microstate incumbent’s ability to meet its universal service obligation and to invest in new technologies is more vulnerable to inefficient entry than that of a “macro state” incumbent;
- increase in the importance of ensuring that “microstate” incumbents have the necessary investment incentives to build a nationwide next generation network; and
- the importance of building economy of scale effects into regulated access prices in “microstates” by adjusting costs to the circumstances.

In terms of market entry, the study expected to see strong competition in the corporate sector of “microstates” but limited competition in the mass market for fixed services. In terms of assessing the costs and benefits of regulation, the costs of developing, implementing and enforcing regulation was found to vary relatively little with the size of the market being regulated while the benefits were typically proportionate to the size of the market. Given these differences in the way costs and benefits vary with market size it is possible that regulatory approaches and remedies which are appropriate in “macro states” lead to economic losses in “microstates”. This is contrary to the TRA’s findings in the “Study Paper” that *“TRA is of the view that these benefits [from an introduction of LLU] will outweigh prima facie the costs of implementing LLU”*.

We would also draw the TRA’s attention to that study which stated that at the time of publication in June 2005, for Malta and Cyprus combined the incumbents had spent 1 million Euros on unbundling products and there had been no clear demand for the product.

It is vital to recognise the importance in “microstates” to maximise economic welfare rather than competition and if an efficient telecommunications industry is to develop. This requires trade offs between competition and level of investment, productive efficiency, and infrastructure competition instead of service competition. Measures which are effective in “macro states” may lead to economic welfare losses in “microstates”.

According to the report there were several key factors for the TRA, as a regulator in a microstate, to consider and Batelco would highlight the following:

- competitive entry is more likely to be limited in a “microstate”;
- assessing outcomes (for example quality, end user prices and innovation) and contestability rather than industry structure (number of competitors and speed of loss of

incumbent market share) is the best way to judge the performance of a microstate's telecommunications industry;

- there are additional challenges in "microstates" of promoting investment in next generation networks; and
- regulatory impact assessments are particularly important in "microstates" to check whether standard remedies are applicable.

Given that smaller economies generate different market dynamics, "microstate" regulation cannot simply copy regulatory approaches developed in "macro states" where the need to get it right is more acute and the risks of regulatory error cannot be borne across a wider economic base.

### **3.2 Bitstream is more economically feasible in residential markets**

The overseas evidence clearly illustrates that bitstream is the most economically feasible and most widely used form of unbundling to serve residential markets. The peak group of NRAs in the EU, the European Regulators Group (**ERG**) recently strongly reaffirmed the importance of bitstream:<sup>17</sup>

*... the provision of bitstream access is essential to the development of competition in the wholesale broadband access market as well as in the retail services market [and] NRAs should mandate this access product. (Emphasis added).*

It has been widely used overseas to provide broadband services to residential and SME customers. For instance, 86% of unbundled lines in Australia are bitstream and 99.30% in the UK are bitstream. Additionally, the Federal Communications Commission (**FCC**) has stated that they are not aware of any new entrant who uses LLU to serve mass market customers.

### **3.3 Bitstream has superior speed of market entry**

Bitstream allows competitors to enter the market more quickly. The technical, operational and commercial arrangements which have to be put in place for LLU are more extensive, complex and usually more controversial than for bitstream. LLU arrangements took 12 months to put in place in Australia, which was much quicker than in other countries, with the UK taking nearly 3 years. Availability of bitstream while the LLU arrangements were being put in place would allow consumer benefits to begin to flow through immediately notwithstanding that LLU will take time to implement.

### **3.4 Bitstream has lower upfront capital costs**

LLU involves a higher upfront capital investment by new entrants than bitstream. LLU capital costs include:

- the MSAN;
- collocation facilities at the incumbent's exchange for the MSAN;
- construction of backhaul if the entrant decides not to lease backhaul from the incumbent;
- upgrading and expansion of its own network management systems to assume from the incumbent maintenance; and

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<sup>17</sup>

Bitstream Access, *ERG Consultation Document*, 14 July 2003, at page 10.

- operation and network management functions in respect of the unbundled line which the incumbent would continue to provide in the “less unbundled” bitstream service.

As mass market customers have a much lower average revenue spend and per customer data volumes than corporate customers, the risks associated with establishing infrastructure in an exchange service area to support LLU is much higher than if entry is by means of bitstream, which can be provisioned incrementally as customer numbers grow. The ERG has commented on the relative advantages of bitstream to LLU:<sup>18</sup>

*The economic differences between the two forms of access [i.e. LLU and bitstream] may turn out more clearly, i.e. they may fit as different input products for different business models or for different phases of market entry. Bitstream access may be called a “low-cost option” as less investment is required, but new entrants can nevertheless use their networks (without having to roll-out to the local MDFs as is the case for unbundled access). With bitstream access, new entrants participate in the economies of scale (e.g. they use the DSLAM installed by the incumbent) thus leveraging off the economies of scale of the incumbent.*

Batelco submits that by implementing LLU, the TRA will be forcing our competitors to invest in technology that is becoming increasingly outdated. The high upfront capital costs required to rollout the increasingly outdated assets required for LLU will be avoided if the TRA implements bitstream only.

We note that LLU requires not only an intensive capital investment by new entrants but also investment in technical expertise. It will be important for successful development of the telecommunications industry that each new entrant undertakes the investment in technical expertise themselves and that the TRA does not provide this technical expertise to the new entrants. Time spent by the TRA developing technical expertise within new entrants is not an efficient use of the regulators or industries time and resources.

### **3.5 Bitstream has lower churn-associated costs**

The costs associated with churning an LLU customer are significantly higher than for bitstream. LLU requires the incumbent’s operational staff to physically cutover the unbundled line at the main distribution frame and usually also requires the presence of the access seeker’s personnel at the customer’s premises to test the line after it is cutover. Bitstream reassignment can be done electronically, and BT has established an electronic provisioning process which allows access seekers to self provision DSL wholesale services.

### **3.6 Bitstream has lower service provisioning delays**

As the LLU reassignment process for individual lines is highly manual, the throughput of reassignment requests is constrained by the staff which the incumbent can make available. In Hong Kong, the regulator (**OFTA**) originally limited the number of LLU reassignments to 36 per exchange per day, which had to be shared between 3 entrants. OFTA has recently raised the number to 100 per day per exchange. Telstra sets a limit of 40 lines per exchange per day. In the US, many ILECs set limits of 25-35 orders per exchange per day. While US rules require the LLU cutover to occur within 7 days of the provisioning request, US operators routinely report that more than half of all requests take longer than 7 days. These physical constraints on LLU processes limit the volume of throughput and make it unsuitable for a mass market campaign. An entrant’s standing with customers would be seriously damaged if it promoted direct connect

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<sup>18</sup> ERG Consultation Document, *Bitstream Access*, 14 July 2003, at page 9.

services based on LLU to a mass market but the LLU processes were unable to cope with the response rate. The FCC majority noted that:

*Competitive carriers also argue that the manual hot cut process is not suitable for mass market customers because the incumbents cannot handle the necessary volume of transactions to support competitive switching in the absence of unbundled local circuit switching and that the non-recurring costs associated with hot cuts are prohibitively expensive..... Competitive carriers have shown that, although they have used hot cuts to serve certain small segments of the market, no competitive carrier relies on hot cuts to offer service to significant numbers of customers served by voice-grade loops. (Emphasis added).*

*For instance, AT&T has presented evidence in the record that, despite years of effort to serve low-volume business locations with a UNE-L strategy that relied on hot cuts, hot cuts could not be provided in the volumes required to support AT&T's customer demand, leading to cancellation of orders for AT&T's competitive service offering. GCI, a carrier operating in Alaska, attempted to rely in part on hot cuts to provide service to the mass market, but it claimed that it had "continual problems with provisioning unbundled loops, especially for small business loops which require a hot cut. GCI states that its business plan requires the incumbent LEC to perform approximately 500 hot cuts per day, but that the incumbent LEC at its peak has averaged only approximately 100 per day.*

As the mass market customer base is highly volatile, the higher upfront fixed costs of LLU makes it much more risky to use in serving a mass market customer base. A substantial proportion of residential and SME customers will churn away before the entrant has covered its fixed costs. These fixed costs are not only represented by the DSLAMs installed in the incumbent's exchange, but also by expanded systems within the entrant's own network required to replace the incumbent's systems which have been unbundled from the loop, such as network alarms, maintenance and provisioning (and which continue to be "bundled" into the bitstream service). The FCC commented:<sup>19</sup>

*Moreover, the evidence in the record demonstrates that there is a significant amount of churn, or movement, among mass market customers. Mass market customers move freely from carrier to carrier when they desire, and have come to expect the ability to change local service providers in a seamless and rapid manner. We find that this movement, or churn, happens most frequently in the first few months after the customer switches to a new carrier and is often driven by "win back" activities. WorldCom, for example, states that it loses 50 percent of its new local customers within the first three months of signing up for services..... The evidence in the record demonstrates that customer churn exacerbates the operational and economic barriers to serving mass market customers. For example competitive LECs incur non-recurring costs upon establishing an end user's service, but generally recover those costs over time, spreading them out over monthly customer bills; high churn rates thus often deprive competitive carriers the opportunity to fully recover those outlays. The record demonstrates that the current level of churn for carriers providing service to the mass market has significant negative revenue effects on the ability of competitive carriers to recover the high costs associated with manual hot cuts. Finally, higher volumes of customer turnover necessitate higher volumes of hot cuts than the record demonstrates incumbent carriers are currently able to provide.*

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<sup>19</sup>

FCC Report, *Triennial Review Order: Report and Order and Order on Remand and Further Notice of Proposed Rulemaking*, in the matter of review of section 251 unbundling obligations of incumbent local exchange carriers, 21 August 2003.

### 3.7 Bitstream is superior in difficult economic times

The ERG has argued that bitstream is the correct choice in challenging financial markets:<sup>20</sup>

*With bitstream access, new entrants participate in the economies of scale (e.g. they use the DSLAM installed by the incumbent) thus levelling off the economies of scale of the incumbent. This has to be kept in mind as bitstream access might be the more appropriate access product in times of dry capital markets. The change of the financial market climate makes funding for new operators much more difficult. (Emphasis added).*

In addition, Batelco submits it is reasonable to assume that any uptake of LLU is less likely since the decision on 3 June 2008 to implement the Strategic Review.

## 4 Bitstream was superior in Europe and several smaller economies for the first few years

Around the world it is bitstream and not LLU that had significant take-up for the initial period that Batelco considers that bitstream will be necessary and suitable and until broadband access is no longer provided over legacy networks.

### 4.1 Europe

In European countries where both bitstream and LLU have been mandated it is initially bitstream that has been widely and increasingly used by entrants to provide competitive services in the market. There was no instantaneous take-up of LLU. This wide use and high initial take-up in the EU highlights:

- the value that operators place on this form of access;
- why bitstream has substantially higher utilisation than LLU; and
- why it produces higher overall broadband penetration.

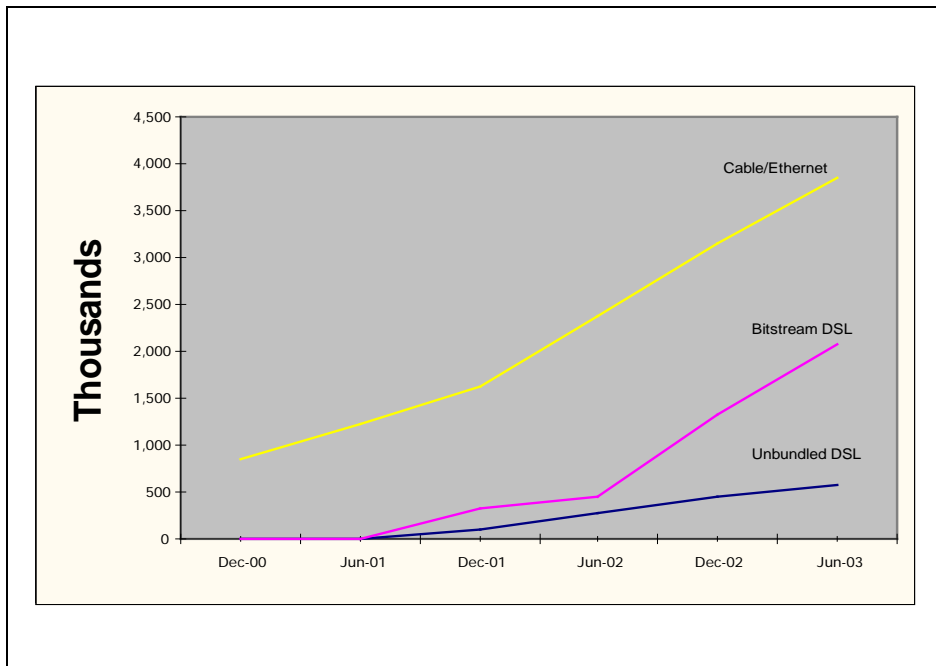
Within 3 years from the introduction of bitstream in the EU and a similar period to which Batelco considers bitstream will be suitable in Bahrain, its take-up grew exponentially. As the figure below shows, of the broadband retail services provided by non-incumbents in the EU on their fixed network, retail broadband services provided by entrants using bitstream account for nearly 40% of services in June 2003 compared to approximately 15% a year earlier.<sup>21</sup>

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<sup>20</sup> ERG Consultation Document, *Bitstream Access*, 14 July 2003, at page 9.

<sup>21</sup> The proportion of entrant broadband services which rely on bitstream is probably higher because incumbents continue to operate cable TV networks in some European countries and therefore distort the cable modem figures.

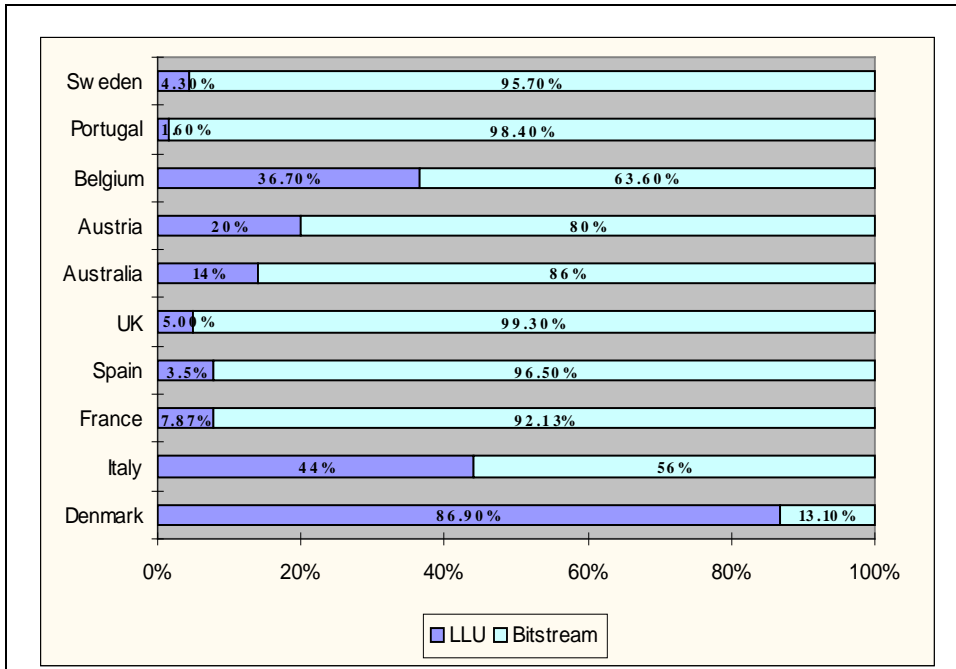
**Figure 2 – uptake of Bitstream in the European Union**



source: pointtopic.com

In 2003, the share of unbundled services which were bitstream was far greater than LLU:

**Figure 3 – Bitstream share of unbundled services**



source: ECTA

More recently, use of bitstream in EU countries that also have LLU, is still growing in a substantial number of Member States as shown below:

**Table 3 – Use of Bitstream in the EU**

	Q1 2007	Q3 2007	Q1 2008	Q3 2008
Belgium	275,360	292,569	329,289	338,275
Denmark	91,203	95,846	102,700	101,758
France	1,160,353	1,169,000	1,116,000	2,120,000
Hungary	174,901	190,132	203,478	203,478
Ireland	127,900	142,400	161,014	177,454
Italy	1,212,000	1,180,000	1,187,000	1,304,000
Lithuania	2,280	2,367	2,382	2,282
Malta	0	2,782	9,686	8,685
Poland	0	0	109,465	254,856
Slovenia	20,466	19,063	19,424	19,339
Spain	181,686	170,527	370,344	358,521
<b>Total</b>	<b>3,246,149</b>	<b>3,264,686</b>	<b>3,610,782</b>	<b>4,888,648</b>

source: ECTA

#### 4.2 Smaller economies

In addition to the EU, in some smaller economies bitstream was also considered initially suitable and it was mandated without LLU for several years. In several countries (such as Malaysia, Jordan and New Zealand) that have considered regulation of bitstream and LLU more recently than the EU, the regulators adopted a different approach to those who assessed it over 10 years ago. The different approach reflects the fact that LLU is becoming an increasingly outdated remedy.

In the countries we analyse below, the regulators mandated bitstream first for at least the period that we consider bitstream will be suitable in Bahrain. After this period, the regulators of Jordan and New Zealand mandated that LLU should also be introduced. Consistent with our proposed approach at section 3, the TRA may wish to conduct an analysis of whether LLU is needed again in a couple of years. We submit, however, that the landscape in 2011 will be very different from 2009 and very different from the analysis undertaken by these countries who implemented LLU after bitstream.

##### (a) Malaysia

In Malaysia regulated services are placed on the Access List. In a 2005 review of the Malaysian Access List, the Malaysian Communications and Multimedia Commission (**MCMC**) included the following items on the Access List:

- Full Access Sharing;
- Line Sharing Service;
- Bitstream Service; and
- Sub-Loop Service.

However, of these four mandated services, bitstream is the only one which the Minister has determined will be activated and apply in Malaysia at the current time. The Minister decided that the bitstream service will apply from 1 July 2005 and that the other services will come into force on a later day as yet to be decided by the MCMC.

In considering which form of unbundling to adopt the MCMC assessed the following criteria:<sup>22</sup>

- regulation for the long term benefit of the end user;
- promotion of a high level of consumer confidence in service delivery from the industry;
- ensuring an equitable provision of affordable services over ubiquitous national infrastructure;
- creating a robust applications environment for end users; and
- facilitating the efficient allocation of re resources such as skilled labour, capital, knowledge and national assets.

The MCMC considered that the access network raises significant potential access issues due to the important and unique role played by the access network in providing telecommunications services. The access network is the most expensive part of the network in which to invest.

In 2008-2009, Malaysia again reviewed the items on the Access List and made no changes. That is, bitstream is still the only form of mandated unbundling in place in Malaysia.

Between the 2004 review and the 2008 review when only bitstream was mandated broadband penetration in Malaysia has significantly increased. In 2004 there were only 252,500 internet subscribers. However, in 2007, there were 1,368,900 internet subscribers which represents a 54% increase.

The number of ISPs also grew substantially between the 2004 and 2008 review. In 2008, there were over 13 ISPs in Malaysia all providing high speed internet access.

#### **(b) Jordan**

In 2005, Jordan considered the shift from traditional legacy networks to NGNs and decided to mandate only cost-based bitstream initially. In the Interconnection Instructions, the Telecommunications Regulatory Commission (TRC) decided in Board Decision No.(2-1/2005) Date (5/1/2005) that:<sup>23</sup>

*Designated Licensees who provide fixed telecommunications services (Incumbent) shall provide Bit-stream unbundling to other licensees.*

Jordan considers that a key operational advantage of bitstream unbundling is that it offers a fully managed end to end service for the new entrant with the incumbent operator having full operational control of the related network elements used to facilitate the service. Connection to the incumbent operator network at various interconnection points, provide the potential for a service provider to differentiate services by offering a variety of levels of quality of service. The ability to connect at different points on an incumbent operator network is dependent upon the

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<sup>22</sup> MCMC, *Public Inquiry Paper: Review and Expansion of Access List Determination*, 8 February 2005, at page 161

<sup>23</sup> TRC Board Decision, No.(2-1/2005), Subsection 4.8.2, at para 87.

service provider having its own network infrastructure or access to infrastructure owned by a third part operator.<sup>24</sup>

In 2008, the TRC conducted a review of its unbundling regulations. In this review the TRC stated that:<sup>25</sup>

*over the last 3 years many of the difficulties associated with the roll-out of LLU that were experienced in countries with regulation that required its introduction have largely been overcome.*

However, as a result of this review which was conducted 3 years after the regulation of bitstream, the TRC decided to mandate LLU in addition to bitstream. In its review it stated that one of the reasons that LLU should be introduced is that the telecommunications markets had developed considerably and that the fixed communications sector had witnessed the issuance of over 5 licences. In addition, the incumbent's service used by other providers to provide broadband was inadequate for the following reasons:

- The incumbent has been providing Data Communications Licensees in Jordan the ability to provide ADSL services to their customers using the facilities of JTC's network.
- However, JTC's network configuration used to provide this service to Data Communications Licensees is identical to that used by incumbent operators in other markets that provide bitstream access to other licensees in their markets.
- The difference, however, is that JTC's National IP Collection Service does not include the actual ADSL service that links the subscriber's premises with JTC's exchange office. This service is provided by JTC at a retail charge to the subscriber (although there is the option for the Data Communications Licensee to pay the charge to JTC and pass on the full, or partial charge to the end user.

Ultimately, due to the growth in the telecommunications market and the particular characteristics of the bitstream product offered by JTC, the TRC decided to mandate LLU as well as bitstream.

The case of Jordan is relevant to Bahrain for a couple of reasons. Bitstream was introduced for 3 years in Jordan before the regulator decided to review the regulatory situation. In reality, although timetables are not set, we would expect that LLU implementation in Jordan will in any event take at least a further two years. The minimum five year implementation gap is precisely what Batelco is requesting in this instance – that, in combination with the periodic RAO assessments and the proposed RAO non-price review. We are proposing that the TRA allow Batelco to offer a more innovative form of bitstream in order to allow it to develop and provide access to those that require it in the interim period that broadband access is required over legacy networks.

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### **(c) New Zealand**

In 2003, the New Zealand Commerce Commission decided to mandate bitstream and not LLU. The Commission considered the following:<sup>26</sup>

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<sup>24</sup> TRC, *Notice requesting comments on the implementation of Local Loop Unbundling, Collocation and Infrastructure Sharing in Jordan*, 2008, at page 9.

<sup>25</sup> TRC, *Notice requesting comments on the implementation of Local Loop Unbundling, Collocation and Infrastructure Sharing in Jordan*, 2008, at page 7.

*The Commission is no longer recommending unbundling of the local loop, because of what we have learnt about the costs and difficulties of that solution in comparison with the potential benefits. Instead, the Commission considers that a direct focus on high-speed Internet access produces higher benefits for consumers, through lower prices and innovation, and will also act as a spur to further improvements in Telecom's efficiency. (Emphasis added).*

In making their decision the Commission adopted the following framework:<sup>27</sup>

*... an assessment of the state of competition in the wholesale markets in which these services examined could be supplied and of the retail markets in which those services could be used to deliver telecommunications services to end-users the costs and benefits likely to result from the imposition of regulation; and the experience in other countries in regulating similar wholesale services.*

The Commission utilised economic consultants to conduct a cost benefit analysis of whether to mandate LLU or bitstream. In doing so, the Commission literally assigned net welfare gains to each regulatory option and selected the path with the greatest net welfare gain. Ultimately, the consultant (OXERA Consulting Ltd) concluded that:<sup>28</sup>

*...overall, after adjusting for potential indirect costs of regulation, the highest standalone benefits from unbundling over a five year period would be realised if full bitstream access was introduced. Those net benefits were estimates at \$75.3 million. (Emphasis added).*

In deciding not to mandate LLU, the Commission reasoned the following:<sup>29</sup>

- platform competition especially in the form of fixed wireless networks was likely to evolve and reduce the extent of the incumbent's bottleneck over time;
- the potential for dynamic efficient gains from LLU was tempered by international experience noting that in a significant number of countries, the gains from LLU have been disappointing;
- the Commission revealed that responses to its draft report indicated fairly limited demands for local loops as the preferred means of competitive entry; and
- mandatory LLU was a resource intensive activity which generated a significant level of controversy in determining terms of access to ULL in overseas jurisdictions.

Some of the negative factors that the Commission found regarding LLU from their study included:<sup>30</sup>

- entrants face large DSLAM set up investment in each exchange area they wish to serve;
- it is likely to be uneconomic in areas with small demand;

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<sup>26</sup> New Zealand Commerce Commission, Media Release, *Telecommunications Act: Commission recommends unbundling for broadband*, Issued 23 December 2003.

<sup>27</sup> New Zealand Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, Public Version, December 2003 in the Executive Summary, at paragraph (iv).

<sup>28</sup> New Zealand Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, Public Version, December 2003, at page 193.

<sup>29</sup> New Zealand Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, Public Version, December 2003.

<sup>30</sup> New Zealand Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, Public Version, December 2003.

- there is likely to be less entry and competition than full bitstream unbundling;
- it is likely to take a long time to introduce;
- complicated management and maintenance of local loop plant (increased operational costs);
- large fixed cost (including OSS costs) of implementation may not be recovered if demand for ULL is low;
- it imposes significant regulatory costs;
- negative impact on alternative infrastructure investment incentives; and
- the approximate \$30 million estimated net benefits from LLU will be reduced if full bitstream unbundling is mandated.

Batelco notes that in late 2007, after 5 years of mandating bitstream only, the Commission decided to also mandate LLU.<sup>31</sup> This was done via an amendment to the Telecommunications Act which included a process for the Commission to make standard terms determination on which designated access or specified service must be supplied to all access seekers requesting the service.

LLU was mandated in response to low broadband uptake. Whilst broadband network coverage was good when compared with other OECD countries, the take up was low. In New Zealand this particular issue was partly caused by free local calling which was exacerbating the cost differential between narrowband dial-up connections and broadband connections.

When making the decision to mandate LLU, the Ministry of Economic Development (**MED**) considered that the introduction of bitstream prior to LLU brought significant benefits to New Zealand. However, ultimately they considered that the adoption was a necessary bridge for access seekers to the rollout of independent backhaul and the eventual rollout of an alternative local loop.<sup>32</sup>

We do not consider that this will be the case in Bahrain in 2011. With the introduction of NFWS we have already seen that alternative infrastructure is providing competitive tension for Batelco and is providing incentives for other new entrants to enter the market and rollout necessary infrastructure.

We also note that the MED considered that it would be at least another 2 years after the regulation of LLU, "before the first investment under regulated terms for LLU could be expected".<sup>33</sup> They considered that in many other jurisdictions, LLU had taken a long time to implement, even after terms of supply have been determined, and "even longer to impact broadband uptake". MED considered that this was:<sup>34</sup>

*...partly because it is a complicated service, partly because of incumbent's delay and partly because new entrants did not have a UBS [bitstream] as an intermediate option.* (Emphasis added).

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<sup>31</sup> New Zealand Commerce Commission, *Standard Terms Determination for the designated service Telecom's unbundled copper local loop network*, Decision 609, 7 November 2007.

<sup>32</sup> MED, *Promoting competition in the market for broadband services*, 28 June 2006.

<sup>33</sup> MED, *Promoting competition in the market for broadband services*, 28 June 2006, at page 7.

<sup>34</sup> MED, *Promoting competition in the market for broadband services*, 28 June 2006, at page 9.

As a result, the MED concluded that although LLU may be necessary:<sup>35</sup>

*...if adopted [LLU] would not be fully implemented until late 2008, while the amended UBS [bitstream] should be operational from mid to late 2007, better meeting the government's shorter term goal of rapidly improving broadband results.* (Emphasis added).

We note that since LLU has been mandated in New Zealand, broadband uptake has remained steady with New Zealand's sitting in 19<sup>th</sup> position in the OECD ranking for broadband take up. This is still below the OECD average.<sup>36</sup>

#### (d) USA

In 2003, the Federal Communications Commission (**FCC**) decided to abolish mandatory broadband unbundling altogether (including all forms of bitstream and LLU).

Section 251 of the Telecommunications Act of 1996 requires unbundling wherever it is necessary, and where without it, local competition would be impaired. However, under a Supreme Court ruling the FCC must take into account alternative facilities outside the incumbent's network that may be available to new entrants and must not assume that an increase in cost or a decrease in quality resulting from denial of access to an incumbent's networks elements impairs the ability of a new entrant to offer service.

The FCC developed 5 factors to be considered when determining unbundling:<sup>37</sup>

- the rapid introduction of competition in all markets;
- promotion of facilities based competition, investment and innovation;
- reduced regulation;
- market certainty; and
- administrative practicality.

According to the FCC, by June 2001 (5 years after the introduction of LLU) of 190 million switched access lines nationwide, only 3.2 million ULL were provided without switching and 4.8 million with switching.

In considering whether to abolish unbundling obligations, the FCC reasoned that:<sup>38</sup>

*the threat of mandatory unbundling for a new service that required a large sunk investment would undermine the ILEC's incentive to deploy fibre networks.*

Of particular note to the TRA is the Supreme Court's decision that the regulator must take into account alternative facilities outside the incumbent's network that may be available to new entrants. When the FCC had to take this into account, the FCC felt that it could no longer mandate LLU. Batelco respectfully submits that given the shift towards NGNs and the move away from traditional legacy PSTN networks, the TRA should take into account alternative and

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<sup>35</sup> MED, *Promoting competition in the market for broadband services*, 28 June 2006, at page 7.

<sup>36</sup> Network Strategies, *Broadband Strategy Options for New Zealand*, 6 March 2009.

<sup>37</sup> UNE Remand Order at 3749, at para 112.

<sup>38</sup> Hausman J., & Sidak G., *Did Mandatory unbundling achieve its purpose? Empirical evidence from five countries*, *Journal of Competition Law and Economics* 1(1), 173-245, at page 182.

emerging facilities. Batelco considers that once they are taken into consideration, the TRA will no longer consider that regulation of the LLU is required.

**(e) Other countries**

Despite its prominence as a regulatory remedy around the world LLU is still only used in a limited fashion by operators in most countries, and where it is used, expected benefits in terms of service innovation and broadband penetration are mostly missing or moderate at best.<sup>39</sup>

Additionally, a recent study on the effectiveness of LLU has shown that it has not achieved its intended effect. The following table highlights the results of the study:

**Table 4 – Effects of LLU**

	<b>Lower retail prices</b>	<b>Entry barriers</b>	<b>Ladder of investment</b>
<b>USA</b> <sup>40</sup>	- LLU has not decreased local services measurably despite the fact that the new entrants had more than 13% of the nation's access lines 7 years after the introduction of LLU. - Prices of local telephone services offered by all carriers in urban areas grew at a slower rate on average before introducing	- There was a strong emergence of facilities based competition for voice customers with the number of cable telephony subscribers increasing from 180,000 in 2000 to 2.5 million in 2003. This implies that the rationale for mandatory unbundling (based on insurmountable barriers to entry) is not substantiated in the USA.	- In contrast to this theory, new entrants in the USA are increasingly relying on unbundled platforms as their preferred mode of entry. - The availability of wholesale access appears to have discouraged new entrants from investing in their own facilities over time.
<b>UK</b> <sup>41</sup>	- No measurable decline in prices of telecommunications services. - New entrants DSL share almost 50%.	- An analysis of platform competition for broadband services reveals that entry unrelated to unbundling currently exists. As of July 2003 (3 years after its introduction), BT operated over 563,000 DSL lines while cable operators served nearly 1.1 million customers.	- It is not apparent that new entrants in the UK have used ULL to evolve into facilities based competitors. This may be due to a high level of facilities based competition prior to mandating LLU.
<b>Canada</b> <sup>42</sup>	- The spread between the CPI and	- With a commanding market share, cable	- Despite the increase in the number of new entrant owned

<sup>39</sup> Spiller P., Ulset S, *Why local loop unbundling fails*, 2003, at page 3.

<sup>40</sup> Hausman J., & Sidak G., *Did Mandatory unbundling achieve its purpose? Empirical evidence from five countries*, Journal of Competition Law and Economics 1(1), 173-245, at page 193-205.

<sup>41</sup> Hausman J., & Sidak G., *Did Mandatory unbundling achieve its purpose? Empirical evidence from five countries*, Journal of Competition Law and Economics 1(1), 173-245, at page 205-218.

<sup>42</sup> Hausman J., & Sidak G., *Did Mandatory unbundling achieve its purpose? Empirical evidence from five countries*, Journal of Competition Law and Economics 1(1), 173-245, at page 225-235.

	Lower retail prices	Entry barriers	Ladder of investment
	the telephone index in Canada narrowed since the LLU was introduced indicating that mandatory unbundling did not have the desired effect of lowering the retail price of telephone services in Canada.	modem providers create a competitive alternative to DSL providers. As such, the use of LLU to promote broadband access competition is difficult to justify.	access lines, Canadian new entrants became increasingly dependent on ULL. Whilst the share of ULL increased the share of resale lines decreased by roughly the same amount. This indicates that most of the substitution is from resale to LLU and does not support the ladder of investment theory which states that the share of leased lines should decrease.

## 5 There is insufficient demand for LLU

Finally, Batelco considers that the TRA has not provided adequate evidence of a proven pent-up demand for LLU. Without sufficient evidence of this demand, Batelco considers that it is inappropriate and unnecessary for the TRA to mandate LLU and require Batelco to undertake the significant investment required to enable LLU. This would not be a proportionate regulatory response to the issue.

Ofcom have recently highlighted the importance of proportionate regulation:<sup>43</sup>

*We must apply regulation in ways that are relevant and proportionate to the prevailing and future circumstances that we face. This has to take into account the need for investment and competition.*

It later emphasised:<sup>44</sup>

*It is important that the costs of introducing competition are proportionate, and are not exceeded by the benefits it brings.*

The TRA provides the following evidence on demand:

- TRA conducted interviews with alternative operators in November 2008;
- 5 operators expressed their interest in LLU; and
- 4 of the operators expressed their wish to see a LLU product available as soon as possible.

International experience shows that expressions of interest in such circumstances do not equate to actual demand for LLU.

Batelco has previously submitted evidence of the shortfalls in recovery of upfront investment already experienced for CPS and bitstream. We believe that if LLU is introduced, both CPS and bitstream will become less attractive (and less likely to recover their upfront investment) and in the absence of firm orders, LLU is likely not to recover the initial up front investment.

<sup>43</sup> Ofcom, *Delivering super-fast broadband in the UK, Promoting investment and competition*, 3 March 2009, at page 5.

<sup>44</sup> Ofcom, *Delivering super-fast broadband in the UK, Promoting investment and competition*, 3 March 2009, at page 38.

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In Singapore, LLU was mandated as the IDA believed that there was sufficient demand to justify the regulatory response. However, since LLU has been mandated there have been no (or very few) requests to implement LLU. SingTel has had to undertake significant investment to ensure that the network is technically capable of providing LLU but there has been minimal take-up of the service. The incumbent, SingTel recently stated in a submission to the Regulator:<sup>45</sup>

*There is little or no take up of these [interconnection related] services – the existence of extensive facilities and services-based competition, which has resulted in telecommunications licensees either deploying and utilising their own infrastructure, or availing themselves of one of the various other wholesale services that is available in the market place*

This has served to distract SingTel from other, more effective and efficient endeavours and investments in the telecommunications market.

Similarly, in the United Kingdom, over 40 companies expressed interest in providing telecommunications services in the UK via LLU in 2000. However, by 2002, only 7 carriers were actually providing or were attempting to provide services via unbundled access. This led the OECD to conclude that:<sup>46</sup>

*the policy of unbundling the local loop has failed, as yet, to generate the benefits expected.*

In New Zealand, LLU was not introduced in 2003 as the regulator was not convinced that there was sufficient demand for local loops as an operator's preferred means of competitive entry.<sup>47</sup> Batelco considers that the situation in Bahrain is similar to the one in New Zealand. Whilst operators may have "expressed their interest in LLU" this does not mean that the operators would actually choose to enter the network in this way.

Given the above, Batelco submits that there is not adequate evidence of actual demand for LLU in Bahrain and that regulation of LLU at this time would be unnecessary and inappropriate regulatory response.

## 6 Inadequate explanation for TRA's change of approach

This consultation marks a turning point in a consistent approach taken by the TRA in the past not to mandate LLU:

- On 30 June 2004, the TRA approved an outline bitstream product to comply with the section 40 requirement to introduce LLU. An explicit reference was made to the interdependencies of pricing principles including the access deficit.
- On 22 January 2006, the TRA issued its wholesale markets determination which, whilst finding Batelco dominant in five relevant markets and identifying potential wholesale inputs, allowed Batelco to create a reference access offer for assessment by the TRA to comply with those findings, rather than prescriptively enforce those remedies. LLU again

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<sup>45</sup> SingTel, *Singapore Telecommunications Limited, Submission on the Second Triennial Review of the Code of Practice for Competition in the Provision of Telecommunications Services*, 30 December 2008, at page 30.

<sup>46</sup> OECD, *Reviews of Regulatory Reform: Regulatory Reform in the UK – From Transition to New Regulation Challenges*, 2002.

<sup>47</sup> New Zealand Commerce Commission, *Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, Final Report, Public Version, December 2003.

was not required to comply with this determination and by 12 July 2006, a bitstream product was ordered by the TRA.

- After a TRA commissioned study commenced in August 2007 into assessing the case for LLU in Bahrain, it was concluded on 28 November 2007 that whilst there were specific problems identified with the bitstream product there were also disadvantages for LLU namely:
  - additional fixed costs which could be significant;
  - higher end user costs for switching from bitstream to LLU; and
  - LLU unlikely to cover the whole of Bahrain because of economic feasibility and potential concentration of demand.

The TRA decided to adopt a “wait and see” approach taking into account the report findings as well as the Strategic Review and the reference offer assessment cycle.

The TRA subsequently changed its policy on 28 February 2008 without detailed explanation and has since not articulated why the change in policy was proportionate and reasonable, given the shortcomings identified in the TRA commissioned report.

## **6.1 LLU will not work unless the TRA rebalances tariffs**

If the TRA decide to mandate LLU, we consider that it is vital that the TRA begin the process of rebalancing tariffs before LLU is introduced. The introduction of LLU in an environment with unbalanced tariffs will only serve to distort the market and hamper effective and efficient competition.

Unbalanced tariffs have posed a problem for liberalising countries around the world. In an unbalanced environment, long distance and international business is attractive to new entrants but not local services as there is little profit in providing this service due to the distorted tariff rates.

Additionally, balanced tariffs are critical in determining an appropriate costing methodology for LLU. It is difficult, if not impossible, to determine a costing methodology for LLU without first working out the costings and rebalancing of retail calls. For instance, the Dutch system of pricing for LLU was initially based on historic costs but then moved to current costs as the initial costing methodology was failing to encourage efficient and effective competition.<sup>48</sup>

We have not found any other jurisdiction that introduced LLU before it rebalanced its tariffs. Such strong international precedence serves to strengthen our position that LLU should not be introduced prior to rebalancing. As discussed, Batelco submits that the TRA should mandate bitstream only and then commence rebalancing. Once rebalancing has been implemented, it may then be appropriate for the TRA to conduct a review to determine whether LLU is still required. As we submit in section 3 we do not consider that by 2011, LLU will be an appropriate remedy for Bahrain.

## **7 Conclusion**

It is vital that the telecommunications market of Bahrain is not held back by imposing out of date regulation. Batelco submits that any decision by the TRA to mandate LLU will hold back the development of effective competition in the Bahraini market. Any such decision will effect not only

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<sup>48</sup> Logica Consulting, *Tariff regulation, the way forward*, November 2001.

NGN deployment decisions, but it will also effect the development of alternative infrastructure investment through alternative platforms.

Batelco further submits that as there still has been no full regulatory impact and/or cost benefit analysis for making this decision, a decision to mandate LLU is premature, inappropriate and unnecessary.

There are currently multiple and relevant “work in progress” on access remedies, particularly actual and forthcoming improvements to the price and non-price terms of bitstream, which have not been taken into account in the Study Paper. Given this, Batelco urges the TRA to mandate bitstream only as LLU is an inappropriate and unnecessary regulation in an emerging NGN environment and will only serve to slow innovation in the Kingdom of Bahrain.

## Schedule 1 — Response to Questions

Question	Batelco response
<p>Do you agree with TRA's opinion that LLU and Bitstream are complementary wholesale products required in order to promote competition? Please elaborate.</p>	<p>No. Batelco submits that LLU and bitstream may have been complementary products in the late 1990s but this is no longer the case. With the development of broadband and NGNs, it is increasingly being considered that LLU and bitstream are no longer complementary and that regulation of bitstream will be suitable for the interim period that broadband access over legacy networks will be necessary.</p> <p>Under the ladder of investment theory, LLU and bitstream may have been complementary products. That is, LLU and bitstream may have been complementary products in the legacy PSTN world. However, as Batelco have argued in section 2.2, the ladder of investment theory does not effectively apply in a broadband/NGN world and regulators now need to unlearn some regulatory assumptions:<sup>49</sup></p> <p><i>Whereas ULL is an important element of access network competition in the legacy circuit switched world, it is not clear that such unbundling has any application in an NGN or in the approach to its regulation.</i></p> <p>This approach has been applied recently in Malaysia, New Zealand and Jordan. Each of these countries reviewed the literature and international experience of regulating LLU and bitstream and decided to mandate bitstream initially (and at least for the interim period considered by Batelco to be necessary in Bahrain).</p> <p>Batelco notes that some commentators still argue that bitstream and LLU are complements. However, their argument for the products being</p>

<sup>49</sup> Nicholls R., *Pedestrian Crossing and Superhighway Robbery: Sources of Market Power in Broadband*, July 2008 at page 10.

Question	Batelco response
	<p>complementary is generally based on the negative aspects of LLU and not of bitstream. For instance, some argue that they are complementary because bitstream is a cheaper (and often preferred method) to provide access to mass market residential customers. Batelco, however, have argued above in section 4, that bitstream is superior to LLU.</p> <p>Batelco does not agree with the assertion that having LLU and bitstream in place will enable more diversified competition. The TRA have stated<sup>50</sup> that LLU is insufficient to provide diversified competition as it requires major investment from OLOs and it is sensitive to economies of scale. Batelco has argued that bitstream is superior to LLU, will deliver superior benefits to Bahrain than LLU and will be suitable for the interim period it is required whilst broadband and NGN markets develop in Bahrain.</p> <p>Batelco does not agree with the assertion that having LLU and bitstream in place will enable OLOs to phase their investments in network roll out over time. As Batelco have argued above in section 2.2, the ladder of investment theory does not apply in the new broadband/NGN telecommunications network. The founder of the ladder concept, Martin Cave, has asserted this view when he stated:<sup>51</sup></p> <p><i>This apparent success of the European model is, however, overshadowed by doubts about whether the ladder approach can be maintained in the same or a similar form as next generation access (NGA) networks are installed. The architecture of such networks differ from those of the PSTN, creating different opportunities for unbundling them...This places greater emphasis in the future on the importance of promoting competition between end-to-end networks, as against the access-based model [of the ladder of</i></p>

<sup>50</sup> TRA, *Study on the Regulation of Wholesale Broadband Markets*, 26 March 2009, at paragraphs 18-19.

<sup>51</sup> Cave M., *Applying the ladder of investment in Australia*, 2008, at page 6.

Question	Batelco response
	<p><i>investment theory</i>].</p> <p>Additionally, the table in section 4.2(e) demonstrates that in countries where LLU has been mandated (including USA, Canada and the UK) the ladder of investment theory has not proven to be correct as OLOs are not necessarily phasing their investments in network roll out over time.</p> <p>Batelco does not agree with the assertion that having LLU and bitstream in place enables OLOs to offer their services all over the country. Batelco considers that the bitstream product has developed significantly over recent years and that with the growth of broadband and NGNs, it is actually able to provide access all over the country. As Batelco have noted in section 3 and in particular section 3.2, bitstream is a superior product and is a product that is particularly superior in providing access to mass-market residential customers.</p> <p>Batelco submits that LLU and bitstream are no longer complementary products. Batelco considers that it is appropriate and necessary to regulate only bitstream and not LLU for an interim period of 2 years whilst the broadband and NGN markets develop in Bahrain.</p>
<p>Do you agree with TRA's opinion that, having LLU and Bitstream in place, regulation of Wholesale DSL is no longer necessary, subject to appropriate safeguards? Please elaborate.</p>	<p>Yes, Batelco agrees that regulation of wholesale DSL is no longer necessary. However, Batelco considers that only bitstream is necessary before regulation of wholesale DSL can be removed. As Batelco have argued in our response to the Study Paper, both LLU and bitstream are not required to ensure benefits flow to Bahraini citizens and Batelco considers that it is appropriate and necessary to regulate only bitstream and not LLU or wholesale DSL.</p>
<p>Do you agree with TRA's proposals regarding the withdrawal of Wholesale DSL as a regulated product, and in particular with the proposed safeguards? Please elaborate.</p>	<p>Batelco considers that the proposed safeguards are overly cautious and the timelines too long. Bitstream is a product that has relatively short timeframes for take- up and efficient use. The technical, operational and commercial arrangements for bitstream allow competitors to enter the market more quickly and the benefits from bitstream start to flow through to the consumer almost immediately.</p> <p>This is partly because LLU has a higher upfront capital investment by the</p>

Question	Batelco response
	<p>entrants than bitstream. LLU capital costs include the MSANs, collocation facilities at the incumbent's exchange for the MSAN, construction of backhaul if the entrant decides not to lease backhaul from the incumbent and upgrading and expansion of its own network management systems to assume from the incumbent maintenance, operation and network management functions in respect of the unbundled line which the incumbent would continue to provide in the "less unbundled" bitstream service. As mass market customers have a much lower average revenue spend and per customer data volumes than corporate customers, the risks associated with establishing infrastructure in an exchange service area to support LLU is much higher than if entry is by means of bitstream, which can be provisioned incrementally as customer numbers grow. The ERG has commented on the relative advantages of bitstream to LLU:<sup>52</sup></p> <p><i>The economic differences between the two forms of access [i.e. LLU and bitstream] may turn out more clearly, i.e. they may fit as different input products for different business models or for different phases of market entry. Bitstream access may be called a "low-cost option" as less investment is required, but new entrants can nevertheless use their networks (without having to roll-out to the local MDFs as is the case for unbundled access). With bitstream access, new entrants participate in the economies of scale (e.g. they use the DSLAM installed by the incumbent) thus leveraging off the economies of scale of the incumbent. This has to be kept in mind as bitstream access might be the more appropriate access product in times of dry capital markets. The change of the financial market climate makes funding for new operators much more difficult.</i></p> <p>Given the ease with which bitstream will provide benefits to the consumers of Bahrain Batelco considers that it will take far less than 12 months to</p>

<sup>52</sup> ERG Consultation Document, *Bitstream Access*, 14 July 2003, at page 9.

Question	Batelco response
	<p>consider whether the bitstream product is 'fit for purpose'. As such, Batelco strongly suggest that any study to be conducted by the TRA should be completed and finalised within 6 months from the date of the issuance of the Access Order and that if the TRA determines that bitstream is fit for purpose, then the TRA should remove regulation of Wholesale DSL within 3 months.</p>
<p>Do you agree with TRA's opinion that, taking into account the technical and economic viability of installing competing facilities in light of the level and rate of market development, it is no more than appropriate and necessary to address the market failure identified to impose upon Batelco an obligation to provide LLU? Please elaborate.</p>	<p>Batelco does not consider that it is technically viable to mandate LLU in Bahrain. Batelco considers this after an examination of the type of LLU being mandated, line quality and network coverage issues and specific site by site conditions and circumstances which come to light as a result of full and thorough survey and assessment as well as the development of an interference management plan.</p> <p>Batelco also does not consider that LLU is economically viable. LLU involves a higher upfront capital investment by new entrants than bitstream. LLU capital costs include:</p> <ul style="list-style-type: none"> <li>• the DSLAMs;</li> <li>• collocation facilities at the incumbent's exchange for the DSLAM;</li> <li>• construction of backhaul if the entrant decides not to lease backhaul from the incumbent;</li> <li>• upgrading and expansion of its own network management systems to assume from the incumbent maintenance; and</li> <li>• operation and network management functions in respect of the unbundled line which the incumbent would continue to provide in the "less unbundled" bitstream service.</li> </ul> <p>Batelco does not consider that it is economically feasible to introduce LLU as there is not sufficient demand for LLU to recover the costs Batelco will incur in order to ensure the network is technically able to deliver LLU.</p>

Question	Batelco response
	<p>As Batelco has argued in section 5, it does not consider that the TRA has adequately proven a pent-up demand for LLU, especially given Batelco's current bitstream customer has stated it will not invest in LLU in Bahrain. Batelco provided evidence from other countries that highlights that even if operators state they would like access to LLU, it does not mean that they will take-up the service. For instance, in Singapore LLU was mandated but there have been few (if any) requests for the service.</p> <p>Additionally, in the United Kingdom, over 40 companies expressed interest in providing telecommunications services in the UK via LLU in 2000. However, by 2002, only 7 carriers were actually providing or were attempting to provide services via unbundled access. This lead the OECD to conclude that:<sup>53</sup></p> <p><i>the policy of unbundling the local loop has failed, as yet, to generate the benefits expected.</i></p> <p>There is also little evidence to indicate that operators in Bahrain would prefer the more expensive option of LLU over the cheaper and easier to implement option of bitstream.</p> <p>As such, Batelco considers that given there is little evidence of demand for LLU will not be economically feasible to mandate LLU. However, Batelco does consider that it is appropriate and necessary to mandate bitstream and allow this service to provide access to those OLOs who require access to the network for the interim period that broadband access over legacy products will be required. As Batelco suggests in section 3, the TRA may wish to undertake a study 2 years after the Access Order is in place to determine whether LLU has become more economically feasible or whether, in fact, bitstream is still the most economically feasible option for Bahrain.</p>

<sup>53</sup> OECD, *Reviews of Regulatory Reform: Regulatory Reform in the UK – From Transition to New Regulation Challenges*, 2002.

Question	Batelco response
<p>Do you agree with TRA's opinion that, taking into account the feasibility and efficiency of providing the form of access, particularly in light of the available capacity, it is no more than appropriate and necessary to address the market failure identified to impose upon Batelco an obligation to provide LLU? Please elaborate.</p>	<p>Batelco agrees that providing LLU as a wholesale product is prima facie feasible. However, Batelco does not agree that it is efficient. Regulation of the local loop should only take place if it is clear that the benefits exceed costs.</p> <p>As Batelco detailed in section 4.2(c), New Zealand based their decision to regulate bitstream over LLU after a complex analysis of the efficiency gains of each service. Ultimately, the New Zealand Commerce Commission found that the efficiency gains from bitstream far outweighed the gains from LLU. The New Zealand study on the efficiency gains from LLU and bitstream concluded the following:<sup>54</sup></p> <ul style="list-style-type: none"> <li>• the estimated allocative efficiency gains from mandating bitstream was NZ \$49 million as opposed to NZ \$34.7 million for mandating LLU;</li> <li>• the estimated productive efficiency gains from mandating bitstream was NZ \$24.4 million as opposed to NZ \$9.8 million for mandating LLU;</li> <li>• the estimated static efficiency gains from mandating bitstream was NZ \$73.4 million as opposed to NZ \$44.5 million for mandating LLU;</li> <li>• the estimated transfer effect from mandating bitstream was NZ \$97.4 million as opposed to NZ \$39.3 million for mandating LLU; and</li> <li>• the estimated overall consumer welfare effect from mandating bitstream was NZ \$170.8 million as opposed to NZ \$83.8 million for mandating LLU.</li> </ul> <p>Additionally, New Zealand decided that the benefit of providing LLU in addition to bitstream would be much smaller and potentially negative.</p>

<sup>54</sup>

New Zealand Commerce Commission, *Telecommunications Act 2001: Section 64 Review and Schedule 3 Investigation into Unbundling the Local Loop Network and the Fixed Public Data Network*, October 2003, at page 175.

Question	Batelco response
	<p>Batelco considers that the results of a similar efficiency assessment for Bahrain would be very similar to New Zealand and as such it is not efficient to provide LLU. However, if the TRA does not necessarily agree with our views about efficiency Batelco considers that it is imperative that they undertake a similar study to that done in New Zealand where the efficiency gains were actually measured. Batelco suggests that as such an in-depth analysis will take time, it may be appropriate at the current time for the TRA to infer from the New Zealand study that the benefits of bitstream far outweigh those of LLU. After such a result, it will be necessary and appropriate to mandate bitstream, taking into account efficiency gains, but not LLU.</p> <p>After 2 years, if the TRA is not satisfied that the efficiency gains from bitstream are evident, they may undertake a full efficiency study when assessing whether to introduce LLU in addition to the already mandated bitstream.</p>
<p>Do you agree with TRA's opinion that, taking into account the TRA's duty to safeguard and encourage the long-term development of competition and the long-term interests of end users, it is no more than appropriate and necessary to address the market failure identified to impose upon Batelco an obligation to provide LLU? Please elaborate.</p>	<p>Batelco submits that mandating LLU will not encourage:</p> <ul style="list-style-type: none"> <li>• the long term development of competition; or</li> <li>• the long term interests of end-users</li> </ul> <p><u>Long term development of competition</u></p> <p>As Batelco has argued in our submission, Batelco considers that LLU is increasingly becoming an outdated solution to in legacy telecommunications environment. The TRA should also recognise there is a trade off between imposing a further remedy in respect of Batelco's fixed network and the development of competition on alternative network platforms. As such, Batelco submits that mandating LLU is not in the <i>long term</i> interests of competition.</p> <p>Batelco considers that all of the benefits that the TRA have detailed in paragraphs 59 to 65 will also apply to the same extent, if not more, if the TRA mandate bitstream only. For instance, LLU may encourage competition but so will bitstream. Within 3 years from the introduction of</p>

Question	Batelco response
	<p>bitstream in the EU, its take-up had grown exponentially. As the figures in section 4.1 indicate, of the broadband retail services provided by non-incumbents in the EU on their fixed network, retail broadband services provided by entrants using bitstream account for nearly 40% of services in June 2003 compared to approximately 15% a year earlier.<sup>55</sup></p> <p>This growth is a key indicator of the effect that bitstream will have on the long term development of competition. Additionally, as detailed in section 3.2, bitstream is an effective product to provide access to residential markets which will also increase the long term development of competition. Batelco notes the TRA's statement in paragraph 64 that "some OLOs may use LLU as their sole means of reaching the retail market". Batelco considers that this statement is not true for OLOs attempting to meet the residential market as bitstream is far superior to LLU in residential markets. Bitstream is also cheaper to implement than LLU and as such will allow for greater competition on price and thereby lead to enhanced competition for Bahrainis in the long term. In fact the ERG considers that bitstream is essential to the development of competition:<sup>56</sup></p> <p><i>... the provision of bitstream access is essential to the development of competition in the wholesale broadband access market as well as in the retail services market [and] NRAs should mandate this access product.</i></p>

<sup>55</sup> The proportion of entrant broadband services which rely on bitstream is probably higher because incumbents continue to operate cable TV networks in some European countries and therefore distort the cable modem figures.

<sup>56</sup> Bitstream Access, *ERG Consultation Document*, 14 July 2003, at page 10.

Question	Batelco response
	<p>Batelco notes that whilst some EU countries triple play services have first been offered by LLU operators many consider that the economic LLU footprint of these OLOs may not reach far enough to sustain wider area competition through triple play packages.<sup>57</sup></p> <p>Batelco also considers that, as the TRA has noted, LLU will discourage infrastructure based competition. The TRA believes this effect can be mitigated if LLU is “appropriately priced”. Batelco understands this means that the price is sufficient to encourage continued investment and give a fair and reasonable return on that investment. However, given the recent approach taken with bitstream pricing in the Draft RAO order and Draft pricing principle in the Draft LLU order (forward looking cost), then the prospects for an “appropriately priced” LLU product on this measure appear low.</p> <p>As detailed in section 4.2(e), in countries such as the USA, UK and Canada where LLU has been introduced, infrastructure based competition has not increased. In fact, in the USA, after LLU was introduced, new entrants increasingly relied on unbundled platforms to enter the market rather than investing in new infrastructure.<sup>58</sup></p> <p><u>Long term interests of end-users</u></p> <p>Batelco also does not consider that mandating LLU will be in the long-term interests of end users. As LLU is increasingly becoming an outdated solution in a legacy telecommunications environment, mandating it will not assist or develop the long term interests of end-users. There is a strong possibility as well the remedy will only benefit a limited category of locations and customer segments rather than the nation as a whole, although there is no firm evidence of any demand for such a service.</p>

<sup>57</sup> Wik-Consult, *Next Generation Bitstream Access*, Study for the Commission for Communications Regulation, 19 November 2007 at page 12.

<sup>58</sup> Hausman J., & Sidak G., *Did Mandatory unbundling achieve its purpose? Empirical evidence from five countries*, Journal of Competition Law and Economics 1(1), 173-245.

Question	Batelco response
	<p>Batelco agrees that Bahrain can aspire to greater heights in relation to broadband development. As Batelco has detailed in section 2.1, broadband is an increasingly important component of a successful information society. Regulators around the world are striving to adapt regulatory settings to ensure that the telecommunications market is able to deliver fast broadband services to end-users.</p> <p>Batelco considers that in order to ensure that any developments in the broadband industry in Bahrain meet the long term interests of end-users, the TRA should examine what consumers actually want in terms of technology and services.</p> <p>As the TRA identified, the launch of the NFWS based offers has increased competition in Bahrain. Both, Mena and Zain have a joint market share in excess of 30% (16% Zain and 15% Mena, respectively) based on most up-to-date subscriber figures provided by the TRA on 29 March 2009. As we have indicated in section 3 above, the success of the NFWS operators shows that Bahrainis have an appetite for alternative technologies and services. The TRA should assess this appetite when determining what will be in the long term interests of end-users. Rather than mandating a product that is becoming increasingly outdated, the TRA should look forward to the growth of new products and the appetite of Bahrainis to utilise such products.</p> <p>Finally, bitstream will deliver to end-users many of the same benefits as LLU. As detailed above, bitstream will bring lower prices, higher speeds and higher thresholds due to lower implementation costs.</p>
<p>Do you agree with TRA's overall conclusion that it is no more than appropriate and necessary to address the market failure identified to impose upon Batelco an obligation to provide LLU? Please elaborate.</p>	<p>No. As discussed at length in our submission and answers to the questions Batelco does not think that the TRA should mandate LLU. Batelco considers that TRA should implement bitstream instead as it will be suitable to provide access for the interim period that it is required to provide broadband over legacy networks. Batelco considers that this is an appropriate and necessary course of action for the following reasons:</p> <ul style="list-style-type: none"> <li>• Any regulatory response needs to be proportionate. Ofcom considers that it is important that the costs of introducing competition</li> </ul>

Question	Batelco response
	<p>are proportionate and not exceeded by the benefits it brings.</p> <ul style="list-style-type: none"> <li>• The TRA has not proven that there is adequate evidence of pent up demand for LLU.</li> <li>• Bitstream is superior to LLU as it: (i) has strong growth in countries where it has been introduced, (ii) is superior in residential markets; (iii) has a faster market entry time; (iv) has lower upfront costs; (v) has lower churn-associated costs, (vi) has lower service provisioning delays; (vii) is more suitable in micro-states; and (ix) it is superior in difficult economic times.</li> <li>• LLU is becoming an increasingly outdated remedy for an old regulatory environment that is no longer appropriate or necessary.</li> <li>• LLU is an inappropriate remedy in an NGN world.</li> <li>• The ladder of investment theory, which the TRA uses to support their argument to regulate LLU, is unworkable in an NGN environment.</li> <li>• Other countries who have recently considered LLU and bitstream have approached regulation differently to those that regulated it 20 years ago. These countries initially regulated bitstream access only. This different approach reflects the shifting landscape towards an NGN environment.</li> <li>• In addition to the above, Batelco considers that bitstream will be suitable for the interim period it will be needed before broadband and NGN environments are fully developed. As such, Batelco proposes that only bitstream is regulated for the next 2 years and then an assessment is undertaken to determine whether LLU should also be mandated.</li> </ul>