House Standing Committee on Infrastructure and Communications
ANSWERS TO QUESTIONS ON NOTICE
Inquiry Hearing: The role and potential of the national broadband network
4 March 2011

AGENCY/DEPARTMENT: COMMONWEALTH SCIENTIFIC AND INDUSTRIAL
RESEARCH ORGANISATION

REFERENCE: Question on Notice, Hansard, 4 March 2011, page 82

Mr FLETCHER—Could you tell us either now or come back to us in writing whether it is
possible to deliver symmetrical services over technologies other than fibre, such as HFC or
DSL, and conversely, to confirm as I believe is the case, that just because a service is
delivered over fibre it is not automatically symmetrical?
Dr Moody—We will take that on notice.

ANSWER

Hybrid fibre coaxial (HFC) and asymmetric digital subscriber line (ADSL) are either
bandwidth limited (ADSL) or shared medium (HFC) asymmetric technologies, and therefore
not suitable for symmetric two-way multimedia applications, such as high quality, high
bandwidth two-way video conferencing applications. Optical fibre access is symmetric by its
nature, although it can be configured to be asymmetric to some extent if required. Further
details about each technology are provided below.

HFC
In typical HFC networks, bandwidth to the subscribers is in the range of 50 Mbps downstream
and 10 Mbps (or 30 Mbps for DOCSIS2.0) upstream. However this bandwidth is typically
shared among 100 to 400 subscribers in the local loop. Competition for available bandwidth
may rise during peak times, reducing effective bandwidth to individual subscribers.

ADSL
ADSL typically offers 10 Mbps downstream and 1 Mbps upstream (up to 24 Mbps down and
3.3 Mbps up for ADSL2+) to individual subscribers without sharing bandwidth with other
subscribers. However, ADSL can generally only be distributed over short distances from the
switch office, typically less than 4 km, and beyond that its capacity may be reduced.

Optical fibre
While optical fibre access is symmetric by its nature, the technology is flexible and the
balance of upstream (client to server) and downstream (server to client) capacity can be
adjusted to a certain extent according to the network's needs. Generally, if service providers
provide ample upstream bandwidth, applications that leverage upstream capacity will begin to
appear.