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Blind Citizens Australia

**Submission to the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry**

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## About Blind Citizens Australia

Blind Citizens Australia is the peak national representative organisation of and for people who are blind or vision impaired. Founded in 1975, our mission is to achieve equity and equality by our empowerment, by promoting positive community attitudes and by striving for high quality and accessible services which meet our needs.

We provide peer support, information dissemination, advocacy support and advice to community and government on issues of importance to people who are blind or vision impaired.

Our work is directly informed by lived experience of blindness and vision impairment. Our members, our Directors and the majority of our staff are blind or vision impaired.

This submission was researched and drafted by BCA member David Morrell, in collaboration with Blind Citizens Australia staff.

## Introductory Comments

We thank the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry for providing Blind Citizens Australia (BCA) with an opportunity to participate in the enquiry.

Clauses B and F of the terms of reference for the Royal Commission hold the most relevance to the issues that are faced by people who are blind or vision impaired. To this end, BCA’s submission will focus on these clauses, which require the Commission to investigate:

“b). whether any conduct, practices, behaviour or business activities by financial services entities fall below community standards and expectations.

f) the adequacy of: (iii) forms of industry self-regulation, including industry codes of conduct;

to identify, regulate and address misconduct in the relevant industry, to meet community standards and expectations and to provide appropriate redress to consumers”

This submission specifically addresses the performance of the Commonwealth Bank of Australia (CBA) in its treatment of customers who are blind or vision impaired who use EFTPOS terminals to pay for goods, services and facilities. The issue arises from the bank’s introduction of the Albert touch screen EFTPOS terminal. Touch screen devices are inherently inaccessible to people who are blind, and to many more who are vision impaired. The touchscreen-only design makes it difficult or impossible for people who are blind or vision impaired to enter their PIN independently. This has resulted in many people having to tell their PIN to someone else in order to complete a transaction.

With at least 75,000 terminals deployed and more to come, at least 435,000 Australians who are blind or vision impaired are adversely affected.

Blind Citizens Australia asserts that an EFTPOS terminal with physical buttons is the only solution that provides people who are blind or vision impaired with a legal and accessible method of entering their PIN independently. There are several options by which this situation could be corrected that the bank could reasonably be expected to explore.

## Underlining Legislation / Principles

### Australian Banking Association:

With the active participation of 24 member banks in Australia, the Australian Banking Association provides analysis, advice and advocacy for the banking industry and contributes to the development of public policy on banking and other financial services.

The ABA works with government, regulators and other stakeholders to improve public awareness and understanding of the industry’s contribution to the economy and to ensure Australia’s banking customers continue to benefit from a stable, competitive and accessible banking industry.

The ABA developed a **Banking Code of Practice** in 2013. Part C7 of the 2013 Code says:[[1]](#footnote-1)

“We recognise the needs of older persons and customers with a disability to have access to transaction services, so we will take reasonable measures to enhance their access to those services.”

A revised Code was released in late July 2018. The banks that adopt it will be expected to comply from 1 July 2019.

Part 4 of the revised Code outlines “Inclusive and accessible banking”. It repeats the commitment made in the current (2013) Code with the minor addition that;

*“33. We will train our staff to treat our diverse and vulnerable customers with sensitivity, respect and compassion.”[[2]](#footnote-2)*

The ABA's **Industry Standards on Accessibility of Electronic Banking** – Standard on Automated Teller Machines (ATMs), Standard on Electronic Funds Transfer at the Point of Sale (EFTPOS), Standard on Automated Telephone Banking, and Standard on Internet Banking – are currently under review.[[3]](#footnote-3)

ABA’s **Guiding Principles for Accessible Authentication** say that

“Accessibility issues need to be considered in the deployment of authentication technologies, to ensure that people with disabilities and older people are not disadvantaged.

Adoption of common standards by banks and other financial institutions in Australia will promote the confidence of customers using authentication technologies and improve the accessibility of retail banking and finance.”[[4]](#footnote-4)

[The Guiding Principles](https://www.ausbanking.org.au/Industry-Standards/guiding-principles-for-accessible-authentication) have been developed to:

* Provide guidance to financial institutions adopting stronger authentication technologies as part of their banking services;
* Ensure that all customers of financial institutions operating in Australia, including people with disabilities and older people, are able to access and manage their finances independently, securely and effectively;
* Ensure that the access needs of people with disabilities and older people are considered in the deployment of authentication technologies; and
* Ensure that financial institutions are able to provide the best possible service to all customers.[[5]](#footnote-5)

**ePayments Code of Conduct:**

The Australian Securities and Investments Commission has an “ePayments code of conduct”, which regulates consumer electronic payment transactions, including ATM, EFTPOS and credit card transactions, online payments, internet and mobile banking, and BPAY. This includes information on pass code security requirements and liability.[[6]](#footnote-6)

### UN Convention on Rights of Persons with Disabilities

The Australian government bound itself to this Convention and its Optional Protocol in 2008 and 2009 respectively.[[7]](#footnote-7) [[8]](#footnote-8)

Article 9: Accessibility

1. To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:

b) Information, communications and other services, including electronic services….

2. States Parties shall also take appropriate measures:

a) To develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public;

b) To ensure that private entities that offer facilities and services which are open or provided to the public take into account all aspects of accessibility for persons with disabilities;

g) To promote access for persons with disabilities to new information and communications technologies and systems, including the Internet;

h) To promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.[[9]](#footnote-9)

### Disability Discrimination Act 1992 (Cth)

Section 24 of the Disability Discrimination Act requires that goods, services and facilities be designed and delivered in a manner that makes them accessible to people with disability.[[10]](#footnote-10)

### National Disability Strategy 2010 – 2020

Policy Area 1 of the National Disability Strategy covers Inclusive and Accessible communities, with the Outcome: People with disability live in accessible and well designed communities with opportunity for full inclusion in social, economic, sporting and cultural life.

Policy Direction 5, under policy area 1 talks about “Communication and information systems that are accessible, reliable and responsive to the needs of people with disability, their families and carers.”[[11]](#footnote-11)

### Universal Design Principles

Universal design is a design methodology that evolved from considerations of disability access. Rather than focusing on accessibility only as it relates to people with disability, it broadens the conversation to highlight the benefits that well-designed services and systems can offer for the entire community. In essence, universal design recognises that our society is made up of a diverse range of people, and involves designing systems, services and facilities so that everyone in society is considered regardless of age, background or capability. [[12]](#footnote-12)

## Community standards and expectations in banking transactions

The Australian community expects that banking services and their enabling technologies will deliver the results claimed to all of its citizens, and will cause harm. These expectations are widely reflected in Australian law.

Among the harm that can result from inaccessible banking services include heightened exposure to the risks of loss, fraud and discrimination.

The Australian community, through its national government, has expressed its view on discrimination by enacting the Disability Discrimination Act. The Act prohibits discrimination in the provision of goods, services and facilities (s24). Services include those relating to banking, insurance, superannuation and the provision of grants, loans, credit or finance s131).

The Australian Human Rights Commission asserts that information and communication are essential components of the provision of most goods, services and facilities.

On the right of access to information, the Australian Human Rights Commission says:

“In December 2006 the United Nations adopted the Convention on the Rights of Persons with Disabilities (CRPD . .... Article (4)(1)(g) of the Convention calls on parties to “Promote access for persons with disabilities to new information and communications technologies and systems ...

… While the Australian Government has primary responsibility for meeting Australia’s obligations under the Convention, all sections of society, including industry …, must play an active role in upholding the rights established by the Convention. ...”

On the face of it, the Australian community might reasonably believe that the Commonwealth Bank had heeded this exhortation.

The central accessibility issue concerning the Albert EFTPOS terminal is around the authentication of the user by means of entering a PIN.

The most specific banking industry guidance about providing accessible means of authentication is given in the ‘Guiding Principles for Accessible Authentication’ (Australian Bankers Association, 2006). Whilst currently under review, this guidance is shown as a current document on the Australian Banking Association web site.[[13]](#footnote-13)

Australians might therefore reasonably expect that a major member bank of the ABA would have adopted this guidance.

The CBA has made a commitment to accessibility in its ‘2017 – 2020 Accessibility and Inclusion Plan’.

While not directly addressing user authentication, the bank says (abridged quote):

“We are committed to improving access to technology for our customers and our employees with disability. We aim to do this by developing a Group-wide framework to ensure: ...

New products and services have been designed and produced using global accessibility standards and best practice design being required components of project design and delivery …

Customer input, testing and feedback is included as a key component in new product design and development, at the first prototype stage and again prior to release to market …”

However, in the absence of specific ‘global accessibility standards’ directly relevant to EFTPOS terminals, let us turn to the bank’s other pillar of excellence - global ‘best practice design’.

Here we find the Australian Human Rights Commission advocating for and explaining the widely accepted global best practice of ‘universal design’.

“5. Manufacturers do not always produce products that achieve a high standard of accessibility. Universal design principles should be applied to all Information and Communication Technology (ICT), but currently this is not the case. Where technology falls short of such standards, these products offer limited functionality for people with disability. Universal design recognises the broad spectrum of human needs and based on this recognition develops products that are usable by the widest possible range of people. Universal design is not only important for people with disability, but also for older people, people with an illness or injury and all people who, with a wide spectrum of capabilities, make up human diversity.

6. The accessibility of ICT products depends on additions which will ensure that anyone is able to access the product, regardless of their needs. This involves:

 a. maximising basic accessibility;

 b. allowing user configuration;

 c. allowing a range of interaction methods;

 d. providing outputs in multiple forms; and

 e. ensuring compatibility with assistive technologies.” [[14]](#footnote-14)

## The Bank’s Performance Against Community Expectations

The Commonwealth Bank may have intended to meet the widely held expectations of the Australian community for fairness (specifically, non-discrimination), but it has failed.

It is also entirely open to conclude that the bank does not take accessibility at all seriously.

In some cases, steps may have been taken to build an accessibility mode into a touchscreen only device. BCA asserts that this approach still falls well short of the needs of people who are blind or vision impaired. This is because:

1. If using a touchscreen device with accessibility mode for the first time, the customer is required to listen to a tutorial so they understand how to interact with the device. It is unrealistic to expect a customer to listen to a tutorial for a common public payment facility that others in the community can access more intuitively.
2. Devices with an in-built accessibility mode require users to carry headphones with them in order to hear the speech output from the device in a retail environment. Sighted consumers are not subject to these same requirements.
3. Even when using headphones, it can be difficult for users to hear the audio feedback from the device in a noisy and crowded environment. This challenge proves even greater for people who have a hearing impairment in addition to blindness or vision impairment.
4. The fact that the only option for PIN input is via a touch screen is discriminatory and falls well short of the needs of some customers. The majority of people who are blind or vision-impaired are over the age of 65. Touch screen technology is relatively new and many older people do not use smart phones or other accessible touch screen devices. This means they may be unfamiliar with the basic concepts underlying gesture-based technology. A tutorial alone will therefore not be sufficient to enable them to use it.
5. In accessibility mode, when a number is entered using the touchscreen of the Albert EFTPOS device, the only audible feedback received is a ‘swishing’ sound. This gives no confirmation of the specific number entered, is likely to be masked by ambient noise, and relies on the accuracy of the requisite gesture.
6. The touchscreen EFTPOS and banking terminals are used by staff working in retail to complete business, banking and operational tasks. Those working in a retail environment who are blind or vision impaired must be able to access these features in order to carry out their roles.

## The Bank’s Advice To Software Developers On Accessible Design

The bank encourages third party developers to create applications to run directly on the Albert, or to communicate with it from other devices such as cash registers. It provides detailed technical advice in its Developer Guidelines.

Much of the advice that the CBA provides to its third party developers has not been followed by the bank themselves in the design of the Albert; most notably, the sections on Gestures and Design, which has led to significant accessibility issues. There are significant accessibility gaps in the advice provided, including a lack of information on ensuring images are accessible to people using screen reading software by providing alternate text or descriptions of the images.

The minimum font sizes outlined in the ‘Typography and Fonts’ section relating to design advice are not large enough to be read by a person who is vision impaired.

The ‘app review process’, under the ‘publish’ tab, sets out technical standards, security and privacy considerations. Accessibility is not included in this section.

There is a tab that is labelled ‘Accessibility’ within the guidelines, however there is no information included in this tab.

One might expect that, if the bank had indeed upheld its commitment to ensure that;

“New products and services have been designed and produced using global accessibility standards and best practice design being required components of project design and delivery …”

there would have been at least an indication to developers of where to learn more about those global standards and practices.

Further detail and analysis of the technical advice provided on the CBA’s website is outlined in Appendix 1.

## Universal Design Principles

The Australian Human Rights Commission advocates the application of the principles of universal design.

“Universal design is a design methodology that evolved from considerations of disability access. Rather than focusing on accessibility only as it relates to people with disability, it broadens the conversation to highlight the benefits that well-designed services and systems can offer for the entire community. In essence, universal design recognises that our society is made up of a diverse range of people, and involves designing systems, services and facilities so that everyone in society is considered regardless of age, background or capability.”[[15]](#footnote-15)

Since the Human Rights Commission has put forward the principles of universal design, let us consider their application to the Albert.

The Centre for Excellence in Universal Design has produced detailed guidance on the application of universal design principles to public access terminals, which include EFTPOS terminals.[[16]](#footnote-16)

The Albert’s performance against the Centre for Universal Design’s relevant recommendations is reviewed below.

**Recommendation 1.7** Ensure that users with restricted or no vision can use all functions of the terminal.

The various tactile techniques advised to implement this recommendation cannot be done on a touch screen.

The CBA has implemented two of the audible techniques suggested (voice output, audible feedback). However, this support only applies to PIN entry.

The CBA has implemented the recommendation to use a telephone style virtual keypad. However – and this is the critical failure – it has implemented a very non-standard means of using the keypad in its accessibility mode via gestures rather than pressing the numbers.

**Recommendation 1.8** Ensure that all outputs can be perceived by users with restricted or no vision.

The Albert offers voice output and audible feedback. However, its effective use relies on having an earpiece available in noisy environments. This is especially so when listening for the audible feedback that a swipe action has been registered (a soft ‘swish’ sound, easily lost in background noise).

It is also noted that the only audible feedback on a number being entered on the Albert touchscreen is the ‘swish’ sound. Users must be very familiar with the Albert and requisite gestures in order to correctly enter their PIN without error.

**Recommendation 1.15** Ensure that an equivalent service is available through an accessible channel for users who cannot use the terminal.

The Centre’s only advice here is to use trained customer service agents who can assist with a wide variety of situations. This is a strategy outside of the bank’s control, as the staff on the ground are employed by the many businesses who use EFTPOS terminals. It cannot rely on them keeping up with training, especially in small businesses with casual or temporary staff.

CBA say they offer

‘… alternative payment options for customers with living blindness or impaired vision including Tap and Pay for purchases under $100, signature preferred cards, and our manual merchant imprinter offering. For more information on these options please visit [Merchant Support](https://www.commbank.com.au/business/merchant-services/tools-support/faq.html).’ [[17]](#footnote-17)

The Merchant Support page does not immediately provide information about these alternatives. In any case, they are problematic.

### Signature Preferred Cards

CBA suggests that a signature preferred card can provide an alternative to entering a PIN, but does not appear to provide them.

Normally a PIN is mandatory for;

“Any purchases, pre-authorisations and cash-out transactions using a domestically issued American Express, MasterCard® or Visa Chip enabled credit or debit card, where the card is inserted into the terminal.

Transactions where a PIN is NOT mandated:

Domestically issued signature preferred Chip enabled cards. These cards may be issued by certain financial institutions to accommodate special needs of individual cardholders and are subject to specific criteria.” [[18]](#footnote-18)

This page does not give any further information about signature preferred cards, even where it might be expected in sections headed ‘What do cardholders need to do?’ and ‘What happens if a cardholder does not have a PIN?’.

No further information can be found on the CBA site for “signature preferred” cards and there is no evidence that the CBA offers such cards to their customers. This is interesting to note in light of three conciliation agreements reached as a result of disability discrimination complaints, by unidentified banks in 2014 agreeing to provide signature preferred cards.[[19]](#footnote-19)

### Contactless Payment

The contactless payment method may be a workable solution for avoiding a PIN on smaller payments. However, a PIN is still required for payments of $100 or more.

The merchant may choose to add a surcharge for any transaction. Contactless payments may incur higher surcharges because they are often processed as credit payments.[[20]](#footnote-20)

This could cost in the order of $50 for a person making $5,000 of contactless purchases in a year. This would be an unavoidable cost for a person who cannot use the Albert terminal.

This estimate is based on guidance from the Reserve Bank of Australia (RBA), which has said that one can expect a surcharge of:

1. less than 0.5% for debit cards;
2. 0.5% to 1% for Visa or MasterCard debit cards;
3. 1% to 1.5% for Visa and MasterCard credit cards;
4. 1.5% to 2% for American Express credit cards

RBA adds that, in general, smaller merchants' costs may be higher than these indicative figures.[[21]](#footnote-21)

### Manual Merchant Imprinter

The manual merchant imprinter is mentioned as an alternative form of payment in the Albert User Guide, where it is referred to as a “click clack machine”. It should be readily available, as it is supplied as part of the normal equipment with every Albert (presumably as a backup device in the event of disasters).[[22]](#footnote-22) [[23]](#footnote-23)

However, this device exposes customers who are blind or vision impaired to a security risk that has long been left behind by sighted users – leaving an imprint of their card with the merchant.

**Universal Design Recommendation 2.7** Provide training or assistance for new users.

The CBA has built an audible tutorial into the Albert. However, again, it has not taken the advice it provides to software developers in the Developer Guidelines referenced earlier.

Under ‘Design > Help’ the bank cautions developers that ‘people will want to start using your app straight away’. It cautions developers to avoid the ‘need to offer your users up front help in a format such as an introduction tutorial’. It suggests that, if a tutorial is necessary, developers should ‘consider simplifying your app’s design’.

The audible tutorial and prompts built into the Albert terminal are likely to be ineffective and have often been reported to be so because:

* the tutorial takes a long time to complete (10 minutes is often suggested, 14 minutes in the author’s case, in ideal circumstances at home using the training app);[[24]](#footnote-24)
* the user is required to understand and practice several new skills;
* it is both necessary and impossible to reinforce learning by glancing back to an earlier instruction - a strategy commonly used by a sighted person;
* learning is likely to be impeded by environmental factors including;
* performance anxiety arising from the unexpected and unfamiliar task;
* social anxiety arising from the enforced public display of incompetence and disability, as well as from inconveniencing customers and the merchant
* noise making the tutorial hard to hear;
* hearing impairment making this problem worse (hearing impairment is correlated with age and therefore with visual impairment);
* the extra delay in finding or the inability to find an earpiece to plug into the Albert.

The Albert training app may help customers to become competent users of the Albert terminal before they have to make a payment.[[25]](#footnote-25) However, the app does not solve the problem of discriminatory treatment because;

1. most users never hear of its existence, since it is not promoted by the bank as part of its publications on the Albert, nor can it be found from a search of the CBA web site;
2. there may be a long gap between using the training app and using an Albert to make a payment;
3. it imposes an expense on customers who do not have any device, and (being an Android app) on those who only have an Apple device;
4. people who are unfamiliar with such devices would have to learn to use the device before learning to use the Albert app.

**Recommendation 2.8** Ensure privacy and security during use.

The privacy and security issue in question is the disclosure of Personal Identification Numbers (PINs), referred to in the ePayments Code, as pass codes. This can happen as a voluntary reckless act, involuntarily as the only way to get help to complete the payment, or unintentionally by means of being observed during entry.

The bank often warns customers not to disclose their PINs. For example:

“You must do everything you reasonably can to protect all means of access to your account. That means making sure your cards, devices, client numbers, PINs, passwords and other codes and electronic equipment are not misused, lost or stolen or disclosed to any account access service. … You must report the loss, theft or misuse of a card, device, PIN, password, Client Number or electronic equipment.” [[26]](#footnote-26)

The CBA also requires merchants to handle PINs in a secure manner. The contract between CBA and merchants governing use of the EFTPOS terminals directs merchants;

“1.8.2 Never … ask for a cardholder’s PIN” [[27]](#footnote-27)

Section 12 of the ePayments Code outlines pass code security requirements:

12.2 A user must not: (a) voluntarily disclose one or more pass codes to anyone…

And Section 11 outlines the liability of the user in the event of disclosing a pass code to others:

“11.2 Where a subscriber can prove on the balance of probability that a user contributed to a loss through fraud, or breaching the pass code security requirements in clause 12:

(a) the holder is liable in full for the actual losses that occur before the loss, theft or misuse of a device or breach of pass code security is reported to the subscriber,”

Yet many people who are blind or vision impaired report that they have no option but to disclose their PIN due to the Albert’s inaccessibility.

It is equally evident that the CBA would be unlikely to enforce these security rules in relation to a PIN disclosed by a customer who has a vision impairment, since it is the bank that has created the situation in which disclosure is likely and has knowingly allowed it to continue.

Therefore it can be asserted that the CBA is aware of the security risk and has demonstrated by its actions that it is prepared to expose vision impaired customers to a higher risk of fraud than other customers.

### Accessibility Mode Is Not Accessible

Universal design principles allow for special measures to be taken to the extent that it is not practical to make the device entirely accessible for every user.

As discussed above, Accessibility Mode is effectively inaccessible because of:

1. the unusual and therefore unfamiliar user interface for entering a PIN;
2. users being unable to apply ergonomic conventions they may have learned from other devices so that they can learn the Albert’s PIN interface in an intuitive manner;
3. the long and complicated tutorial required as a consequence of the above;
4. the impracticality of completing – or even beginning – the tutorial in many payment situations;
5. the loss of whatever skills may have been learned due to relatively infrequent opportunities for practice.

### Accessibility Mode Disables Customers Who Have Vision Impairments

The inaccessible Accessibility Mode forces blind and vision impaired customers into disabling circumstances. In particular:

1. dependence on others to complete tasks that sighted persons complete independently;
2. loss of time and convenience compared to sighted customers for whom every effort is made to ensure that payment is as quick and convenient as possible;
3. increased risk of being locked out of their account after 3 failed attempts to enter a PIN;
4. increased risk of fraud if a PIN is disclosed or card details are left with the merchant by using a card imprint machine instead of making an electronic payment.

# Redress Mechanisms For Consumers Are Ineffective

Here we address the term of reference;

“e) the effectiveness of mechanisms for redress for consumers … who suffer detriment as a result of misconduct …

f) the adequacy of;

1) existing laws and policies of the Commonwealth …”

As noted above, the CBA suggests that customers may use signature preferred cards if unable to use the Albert terminal. Yet signature preferred cards do not appear to be available from the CBA. They are mentioned on the CBA web site as an alternative to using the Albert, but not as a product offered by the bank to its customers. Another major Australian bank advises that they do not offer signature preferred cards. This is curious, to say the least, in light of 3 conciliation outcomes in the Human Rights Commission, in which it was held that unlawful discrimination had occurred and unnamed bank(s) agreed to provide signature preferred cards as a means of reasonable adjustment.[[28]](#footnote-28)

It is also noted that Blind Citizens Australia has been obliged to abandon an 18 month conciliation process in relation to the Albert due to the inability to reach an agreement. The complainants are now considering their options with help from the Public Interest Advocacy Centre. However, they are faced by the very intimidating prospect of seeking orders in the Federal Court, with the risk that devastating costs may be awarded against them if they fail.

This has occurred even though;

1. the bank could easily halt and even roll back deployment of the Albert terminal until a fully accessible solution has been found and;
2. accessible solutions can be found.

## EFTPOS options can be made accessible

Blind Citizens Australia asserts that there are plausible solutions to the accessibility issues posed by the Albert, and that it would not be an unreasonable hardship for the bank to halt and even roll back its deployment until the matter is resolved.

BCA is also concerned that, while it hasn’t yet been seen, other banks may develop and roll out inaccessible touchscreen EFTPOS devices.

### Deployment Can Be Stopped Until Accessible Solution Is Found

The CBA has many older EFTPOS terminals in use, and even offers some among its current preferred terminals.

EFTPOS terminals “Leo” and “Emmy” are given equal billing with “the Albert” on the CBA website[[29]](#footnote-29), yet anecdotes suggest that the bank strongly encourages merchants to prefer the Albert.

The Emmy and Leo EFTPOS terminals are both compatible with the CBA Small Business app. There is no reference to accessibility in information about the EFTPOS terminals or the Small Business app. It runs on a smartphone or tablet that is linked to the terminal. Android and IOS (Apple) versions are available.[[30]](#footnote-30)

The Ingenico IWL250 series, while not explicitly listed among the preferred terminals, are shown in association with specialised services offered to health businesses.

Albert is made by [AEVI](https://www.aevi.com/about-aevi/). This company offers several EFTPOS terminals that have a physical keypad. Among them is the Sofia, which appears to be able to run all apps that Albert can run.[[31]](#footnote-31)

The bank also offers less prominent information about several other terminals. Some of these have been seen with CBA branding in businesses.

Technical details of these EFTPOS terminals can be accessed in Appendix 2.

## Accessible Solution Can Be Found

The following are presented as ideas worth exploring. Blind Citizens Australia will not express a view on their merit until they have been carefully evaluated with complete user-testing.

### Albert Redesigned With Refreshable Tactile Touch Screen

It may be possible to replace the touch screen on the Albert with one in which ‘keys’ can be made to rise out of the touch screen as small raised bubbles when and where they are needed.[[32]](#footnote-32)

This would enable the entirety of the Albert’s functions to be available to people with impaired vision, especially if combined with the speech and audible feedback already built in to the Albert.

Note: tactile screens such as these are not able to display Braille. Their spatial and temporal resolution is limited to displaying buttons. However, Braille is not required if buttons and tactile markers are used in combination with audible feedback and speech.

###

### Albert with Accessibility API

This option would be more challenging to realise, but could deliver the greatest benefits.

An Application Programming Interface (API) is a feature found on many devices whereby the device’s operating software provides a channel through which to communicate with other software. The Albert already relies on a Payment API so it can communicate with software running on other devices, such as cash registers and computer-based point of sale terminals.

Modern computer operating systems such as Windows, MacOS and Linux all offer accessibility APIs. These enable any software running on the computer to have a standardised form of 2 way communication with the accessibility features provided by the operating system.

The Albert’s Android operating system already includes parts of an accessibility API made up of 2 other APIs that provide Text To Speech and Voice Recognition. The Albert’s speech capabilities are realised through the Text To Speech API. The Voice Recognition API is not used and has restrictions placed on it, perhaps to enhance security.[[33]](#footnote-33)

In principle, a more complete accessibility API could be included in the Albert.

This could enable fully accessible control of all functions of the Albert, not just entering a PIN.

Accessible control software could then be deployed on as many different types of physical devices as were required to meet access needs of a wide variety of people with disabilities – far more than just those with vision impairments.

Further, if the API was adopted as an industry standard, it could provide a means of control for any person with a disability of any as yet unknown EFTPOS devices.

Such devices would require careful attention to security issues. For example, other devices may send payment instructions to the Albert’s Payment API and receive back the results of the payment action. However, as a security measure, the actual payment is always processed inside the Albert and PIN entry is required via the Albert’s touch screen. This is because the bank has no control over software running on third party devices such as cash registers. However, there is nothing to stop the bank from having its own certified accessible payment device. Such a device would include a key by which it could authenticate itself to the Albert and engage in encrypted communication with it.

## Recommendations

To ensure the rights of people who are blind or vision impaired are effectively upheld while using banking products and services, Blind Citizens Australia asks for the support of the Royal Commission to recommend:

1. Australian banks to consider accessibility in the design and procurement of all new EFTPOS terminals, including:
* Ensuring products are designed according to universal design principles
* Ensuring all functions of a product, including those that would be used in a business environment, are accessible to people with disability
* Ensuring prototypes are user tested in simulated environments that replicate the circumstances under which customers are likely to encounter the device.
1. All Australian businesses to consider accessibility when obtaining EFTPOS terminals from banks, and only utilise machines that have physical buttons.
2. The Australian Government to introduce compulsory standards to better regulate accessibility across the banking and financial services industry, and achieve greater consistency in the design of banking products.
3. The Commonwealth Bank to immediately halt deployment of the Albert terminal until it can demonstrate that it is able to provide independent and equal access to people who are blind or vision impaired in a manner that meets community expectations in a non-discriminatory manner.

## Appendix 1.

### **The Bank’s Advice To Software Developers On Accessible Design**

The bank encourages third party developers to create applications to run directly on the Albert, or to communicate with it from other devices such as cash registers. It provides detailed technical advice in its Developer Guidelines.

The Developer Guidelines were accessed by registering as a developer on the CBA PI Appbank.[[34]](#footnote-34) A summary of the advice on accessibility follows.

‘Design > Buttons’, ‘Design > Icons’ and ‘Design > Colour’ would help many users with low vision;

‘Design > Gestures’ and ‘Design > Help’ gives advice that has not been followed by the bank in designing the Albert, leading directly to major accessibility failures.

‘Design > Images’ does not caution developers about the limitations of images for people who are blind, or tell them to make provision for speech interpretation of images such as using ALT text or associated descriptions.

‘Design > Typography and Fonts’ cautions developers to ensure that their apps are readable but specifies a minimum font size that would be unreadable by anyone with even moderately impaired vision. The bank advises that;

“For Albert, we’d recommend a ... minimum size no smaller than 24px...”

Characters at 24 pixels would be 2.83mm high on the Albert screen, which has a usable height of 146mm made up of 1234 pixels (1280 – 2 x 23 pixel borders).

The ubiquitous Snellen method of measuring visual acuity presents the viewer with characters called optotypes, in which the lines that make up the character are 1/5 of its height and width. However, this is not the case with fonts used in print or on screens. Analysis of a character from a commonly encountered font (a letter E in the Arial font) shows that horizontal elements of the character are about 1/10 of the size of the whole character.

The horizontal lines in an Arial character 2.83mm high would therefore appear as lines 0.28mm thick on the Albert screen.

 On the author’s admittedly inexpert calculation, a viewer would therefore need to have corrected visual acuity of 6/18 or better to read such a character from a distance of 300mm. [[35]](#footnote-35)

Image: A capitalised letter E in Arial font

A World Health Organisation study estimates that in developed countries visual acuity of 6/18 or worse affects 1% to 2% of all people, or 3% to 5% of people aged 50 or older.[[36]](#footnote-36) This corresponds to approximately 250,000 to 500,000 Australians, of whom 90-95% are 50 or older.[[37]](#footnote-37)

This is a best case scenario, assuming clinical test conditions (good illumination, no glare, no reflections, high contrast, stationary target, time to look carefully). Performance would actually be degraded by any of these being degraded.

‘Design > Lists’ specifies that list entries must be of a size that would require near normal vision to be read. List lines must be 50 pixels high. That translates to fonts that must fit within the height of list members. That is, fonts must be less than 5.9mm high on the Albert screen, which has a usable height of 146mm made up of 1234 pixels (1280 – 2 x 23 pixel borders).

‘Publish > App review process’ sets out criteria in detail. Accessibility is not among them. Emphasis is given to technical standards, security and privacy.

The ‘Downloads’ section offers essential resources to developers. Among these is a software development kit, which includes extensive technical documentation for developers. Accessibility is not mentioned anywhere in these documents.

Most shocking of all, ‘Develop > Accessibility’ does not contain any text, as shown in the following image. When other headings are selected, text appears between the menu and the dark page footer.

One might expect that, if the bank had indeed upheld its commitment to ensure that;

“New products and services have been designed and produced using global accessibility standards and best practice design being required components of project design and delivery …”

there would have been at least an indication to developers of where to learn more about those global standards and practices.



Image: Screen Shot of Accessibility Page, which contains no information, in developers guidelines on CBA’s website

In designing the Albert’s Accessibility Mode the CBA does not take its own advice to software developers.[[38]](#footnote-38)

‘Design > Gestures’ urges developers to;

“Remember…

Use standard, familiar gestures as users expect gesture consistency across apps

Instil confidence in your users by providing immediate feedback for gestures

Keep any customer facing actions you may have as familiar and immediately intuitive as possible as customers may only be very occasional users”

The standard gestures listed in its ‘Gesture List’ are;

1. Touch: Produces the default functionality for a given item and is the most familiar gesture for users.
2. Double touch: Zooms into content. Also used as a secondary gesture for text selection
3. Swipe: Scrolls overflowing content, or navigates between screens in the same hierarchy.
4. Pinch open: Zooms in to content.
5. Pinch close: Zooms out of content
6. Drag: Rearranges data within a screen, or moves data into a container (e.g. folders on Home Screen);
7. Long Press: Enters data selection mode and allows a user to select one or more items in a view and act upon the data using a contextual action bar. Avoid using long press for showing contextual menus. Also use this gesture sparingly for Albert apps and consider offering an undo or cancel function so any accidental actions can be reversed.

Albert Accessibility Mode uses the following gestures when in accessibility mode, some of which are non-standard and others of which are standard but used for non-standard purposes:[[39]](#footnote-39)

1. Swipe, but for a non-standard purpose (to move between digits on the virtual keyboard)
2. Double touch: standard gesture though used for its secondary purpose (text selection) so may not be expected by users;
3. 2 finger touch: not a standard gesture, used as an alternative to double touch;
4. Long press with 2 fingers: non standard gesture used to submit completed PIN. Forces user to restart PIN entry if all digits had not been entered or were incorrect. 3 wrong entries locks account.
5. Long press with 3 fingers: non standard gesture, used to cancel the transaction and return to the previous screen (the account selection screen);

Note that the 2 and 3 finger long presses may be confused with a long press using 1 finger. Customers may try to use the 1 finger long press because it is a standard gesture that they may therefore have used elsewhere. It will have no effect, but confuse users and thereby cause frustration or a subsequent mistake.

## Appendix 2:

### **Terminals with Keypads used by and available to the CBA**

#### [Leo](https://www.commbank.com.au/business/merchant-services/eftpos-options/mobile-payments/leo.html?ei=leo)

Accept payments away from the counter

Use your phone or tablet as a secure payment tool

Create customised apps to suit your business

From $60 per month, which is the same as the Albert.

Leo appears to be a discontinued model made by Ingenico. The letters ‘ISMP below the screen are the same as those in the model names of the Ingenico [ISMP3](https://www.ingenico.com/pos-solutions/smart-pos/mobility-for-retailers/ismp3.html) and [ISMP4](https://www.ingenico.com/pos-solutions/smart-pos/mobility-for-retailers). However, the Leo’s screen uses older reflective LCD technology, whereas the current models use more modern coloured LED or back-lit LCD screens.

#### [Emmy](https://www.commbank.com.au/business/merchant-services/business-app.html?ei=emmy)

Turn your phone or tablet into a point of sale device

Provide invoices and estimates

Pair with the CommBank Small Business app

From $30 per month.

Emmy is a currently supported (though older) model made by [Ingenico](https://ingenico.us/binaries/content/assets/us-website/library/datasheets/icmp-datasheet.pdf).

#### [IWL250](https://www.commbank.com.au/business/merchant-services/eftpos-options/eftpos-health.html?ei=eftpos-health)

The older Ingenico IWL250 remains as preferred CBA device in some specialised applications. It is shown among the preferred terminals set up to work with 2 specialised applications for health business (Healthpoint and Mediclear).[[40]](#footnote-40)

**Other EFTPOS Terminals With Keypads**

CBA lists several other devices with physical keypads among its ‘Other EFTPOS Terminals. These are the Ingenico [IWL252](https://www.commbank.com.au/content/dam/commbank/business/pds/iwl252-quick-qperator-guide.pdf) and [IWL255](https://www.commbank.com.au/content/dam/commbank/business/pds/CBA2900_210912.pdf) (both marked as IWL250 below the display) and [ICT250](https://www.commbank.com.au/content/dam/commbank/business/pds/ict250-quick-operator-guide.pdf). [IPP350](https://www.commbank.com.au/content/dam/commbank/business/pds/ipp350-quick-operator-guide.pdf) and [5110](https://www.commbank.com.au/content/dam/commbank/business/pds/eftpos-lite-terminal-guide.pdf).

Models beginning IWL are wireless for in-store links. Models beginning ICT are cabled ‘counter top’ devices. Models beginning IPP are ‘PIN pads’ (less capable devices that rely on an external cash register for input).

CBA also supports the keypad EFTPOS terminal [XPOS](https://www.commbank.com.au/content/dam/commbank/business/pds/ADB2606_050210.pdf). It appears to be intended for use with a few specialised business types.

**AEVI Sofia EFTPOS Terminal With Keypad**

Albert is made by [AEVI](https://www.aevi.com/about-aevi/). This company offers several EFTPOS terminals that have a physical keypad. Among them is the Sofia, which appears to be able to run all apps that Albert can run.[[41]](#footnote-41)

The differences are that the Sofia terminal;

* has a smaller screen (4 inches diagonal instead of 7 inches);
* has a camera with slightly lower resolution (5 megapixels instead of 8)
* does not have a built-in receipt printer or a USB port (used by technicians for maintenance).

The makers describe the Sofia and Albert as follows:

“Sofia is a hand-held, all-in-one, 4-inch SmartPOS device that integrates mag stripe, chip card and contactless card reader, a bar code scanner and a 5-megapixel camera. As an AEVI-enabled device, Sofia can run all apps available on AEVI’s Global Marketplace. Combined with the right business apps, the device provides increased mobility in taking payments and performing other secure transactions.”

In comparison:

Albert is an Android-based tablet with an integrated encrypting PIN pad, contactless card reader, mag stripe reader, chip card reader and receipt printer. It´s an easy-to-use, multi functional tablet which runs productivity apps, takes secure cashless payments from any card or mobile device, and is EMV and PCI PTS-certified. Albert is connected to AEVI’s Global Marketplace.”

Note: the Sofia’s physical keypad still presents an accessibility issue for a person who cannot see it, because the layout is slightly different to a standard telephone style keypad (the zero is to the right of 6 instead of being below 9). However, it would be much simpler to explain that one simple concept than to explain the Albert terminal’s Accessibility Mode.

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