final report

Phone app for pasture management – overview of development

Abstract

The Department of Agriculture, Fisheries and Forestry, Queensland (DAFFQ) managed the development and launch of the first FutureBeef Program for northern Australia (FutureBeef) decision support app, Stocktake Plus, for graziers in northern Australia. This app represents the next generation of decision support tools and is based on the previous, well-respected Queensland Government Stocktake monitoring software. Stocktake Plus promotes the Best Management Practices (BMP) of monitoring grazing land condition and forage budgeting for more proactive management of pasture and livestock. The aim of developing Stocktake Plus was to make these practices easier to complete and more immediate for graziers, hence boosting overall industry adoption.

The project team oversaw management of the app development company (now Communications Group Pty Ltd, trading as Fresh) to ensure the app met agreed specifications and undertook rigorous internal testing. The project team also ensured demonstration and testing of the app with industry and stakeholders.

The Android and Apple versions of the app were launched in April 2013 and supported by the Stocktake Plus website and 'Dashboard' online application for users to securely back-up and manage their monitoring information.

The launch of the Stocktake Plus app represents a significant step forward in pasture management decision support tools for northern Australian graziers. It also represents significant Research and Development (R&D) investment in the app itself and the supporting tools and resources (developed over many years) that underpin its functionality.

The impact and success of the Stocktake Plus app will be measured by adoption of the tool, changes in producer practices and on-ground outcomes over time.

Executive Summary

This project was undertaken to develop the first FutureBeef decision support app, Stocktake Plus, for graziers in northern Australia. The research organisation's role was to project manage the development process to ensure all agreed specifications were met. Furthermore, the project team supported the development company (Fresh, contracted directly by Meat and Livestock Australia (MLA), under contract B.NBP.0735), by providing access to Background Intellectual Property and all necessary Research, Development and Extension (R,D&E) expertise. This included support tools required within the app and ensuring the functionality of the app so it was technically correct, logical and practical for graziers in Northern Australia.

Three integrated products were developed within this project:
1.   Stocktake Plus app for Apple devices
2.   Stocktake Plus app for Android devices
3.   Stocktake Plus webpage, which includes pages on the use of the app including Frequently Asked Questions (FAQ) and support, along with the 'Dashboard' application for users to securely store and manage their data through their user account.

The Stocktake Plus app allows the user to monitor land condition, stock numbers and rainfall. The app also has a forage budgeting tool to help calculate the optimal balance of stock to available pasture. Stocktake Plus also produces reports for all records kept, including long-term 'benchmark' carrying capacities for paddocks and properties. Records are securely backed-up on a server, and protected by user account names and passwords.

The app based on the previous, well-respected Queensland Government Stocktake monitoring software, now allows the user to complete calculations in the paddock on their mobile device for an immediate solution to record-keeping. The app also has a full range of inbuilt support tools, including land type factsheets, pasture yield and ground cover photo standards, and pasture growth output from grass production model (GRASP) for a range of land types and locations across northern Australia.

The intuitive design of the app and these inbuilt support tools help make monitoring grazing land condition and forage budgeting much more accessible for graziers and advisors and is consistent with Grazing BMP. The app design removes barriers to adoption that traditionally required good knowledge of the science and techniques that underpin monitoring and budgeting.

The Apple and Android Stocktake Plus app and associated webpage were developed and launched in April 2013. Overall, the three products exceeded expectations of the project team and stakeholders. Peer and industry testing/demonstration improved the end products and helped to remove any technical or practical glitches with the app prior to launch.

The project had a minor slippage with the launch date (approximately one month), and one aspect of the original specifications related to the web version was not fully met. The launch date slippage allowed the project partners to be confident in the legal disclaimers and branding associated with the app and gave the developers and project team more time for internal testing. The app was still launched in time for the optimal monitoring and forage budgeting period in northern Australia (end of growing season, April/May).

The adjustment to original specifications surrounding the web version of the app were renegotiated and managed by MLA and Fresh and did not detrimentally affect the overall project or resulting products.

Project management and app testing undertaken in the project was substantially more than originally anticipated, however the additional work significantly benefited the end products. Furthermore, each of the inbuilt support tools within the app were also reviewed and improved prior to inclusion. The project was an excellent opportunity to integrate and refine the various tools. Special acknowledgement must be made of the various colleagues, project partners and other departmental agencies that undertook this work, mostly out of good-will, to ensure the products launched represented the best R,D&E outcomes.

Since the success of the Stocktake Plus app, as a decision support tool and extension vehicle for key grazing BMP, can only be measured by industry use of the app, and adoption of these practices, a third phase of project work has been proposed.

The aim of the proposed project would be to extend and evaluate the impact of the Stocktake Plus app, whilst also scoping the role for apps as decision support tools within the FutureBeef Program. At the time of this final report, the proposal for this additional work was being considered by DAFFQ and MLA.

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1. Background

Development of phone apps for applications in agricultural industries has been increasing rapidly in recent years. MLA's 2013 digital assets survey found 25% of producers are now using mobile devices, and that too is rapidly growing.

This project follows a preliminary investigation (B.NBP.0668, completed in 2011) into the development, need and potential impact of a mobile forage budgeting and land condition monitoring application for the northern grazing industry.

The app has been based on the industry-recognised Stocktake program developed by DAFFQ and delivered by FutureBeef as a one-day training package with associated *Microsoft Access database* software. The practices of land condition monitoring and forage budgeting are considered BMPs, however, they are not always readily implemented on-farm.

Prior to this project, these practices involved a number of steps, both in the paddock and back in the office, using a large number of associated tools, techniques (land type framework, ABCD land condition assessment, pasture yield and ground cover photo standards etc) and devices (camera, GPS, dendrometer) before graziers, researchers or agri-advisors could get useful monitoring (trend) or decision support information.

Not surprisingly, producers often found it difficult to get started with these practices given the complexity associated with bringing all the information, skills, tools and techniques together. Therefore adoption, even post-training, has been modest.

Results from the preliminary investigation suggested that the availability of a grazing land management app that would guide users through these practices and provide associated tools within one device should significantly increase the number of producers routinely undertaking these practices. As a consequence, better data recording should result in better grazing land condition across northern Australia, reduced risk for pasture and animal performance and, perhaps, a modest and sustainable increase in average stocking rate (relative to the long-term carrying capacity).

This project had the strong support from the Northern Beef Industry Council, who believed that the beef industry needs to explore the potential of apps as decision support tools, especially for the younger demographic, and that this particular app development was the most suitable and the most promising in terms of industry impact.

2. Project Objectives

By 30 April 2013#:

1. Developed the imonitor* (working title) app for smart phones using both Apple and Android platforms. The research organisation will guide the selected development company to ensure the app is developed to specification, within budget and is adequately tested.

2. Concurrently developed and tested a web-based version of the same app which can be used independently of smart phone technology and as a support to smart phone users to facilitate training, updating and secure data storage. The research organisation will guide the selected development company to ensure the web-based version is developed to specification, within budget and is adequately tested.

Amended following Milestone 3.2.1 to 30 April 2013.
 * *App title* **Stocktake Plus** *was used rather than originally proposed working title.*

3. Methodology

The project team undertook the following steps to achieve the project objectives:

a) Clarified the project scope and final specifications with the app development company (Now Communications Group Pty Ltd, trading as Fresh) using the scoping and design analysis completed as part of the preliminary project (B.NBP.0668).

b) Instructed and supported Fresh throughout the development of the Apple and Android Stocktake Plus app and the associated web-page. Providing context, all necessary information, tools and solutions as required.

c) Worked closely with Fresh, MLA, FutureBeef and (DAFFQ) to ensure the app met agreed specifications, cost and time constraints.

d) Rigorously tested multiple versions of the app throughout development to ensure it was technically correct, logical and practical for graziers in Northern Australia.

e) Organised and supervised the testing of the versions of the app, and the web server, with producers, stakeholders and extension personnel.

f) Investigated any hosting costs and ongoing maintenance costs for the app and web server. Provided options for meeting those costs.

g) Recommended the purchase cost of the app and a strategy for its promotion and support through FutureBeef.

4. Results and Discussion

Stocktake Plus, the products produced within this project
Three interlinked products were developed within this project:
1. Stocktake Plus app for Apple devices
2. Stocktake Plus app for Android devices
3. Stocktake Plus webpage, which incorporates pages on the use of the app including Frequently Asked Questions (FAQ) and support, along with the 'Dashboard' application for users to securely store and manage their data through their user account.

Stocktake Plus is a grazier decision support tool, which allows the user to **monitor** land condition, stock numbers and rainfall. It has a forage budgeting tool to help **calculate** the optimal balance of stock to available pasture. Stocktake Plus also produces **reports** for all records kept, including long-term 'benchmark' carrying capacities for paddocks and properties.

Stocktake Plus represents the next generation in FutureBeef decision support tools. It is based on the previous, well-respected Queensland Government Stocktake monitoring software, but now allows the user to complete their monitoring and calculations in the paddock on their mobile device for an immediate response.
The app also has a full range of inbuilt support tools including land type factsheets, pasture yield and ground cover photo standards, and pasture growth output from the grass production model (GRASP) for a range of land types and locations across northern Australia.

Stocktake Plus:
- Assists in monitoring grazing land condition by logically guiding the user through the process;
- Stores information and produces reports, including long-term carrying capacity calculations, based on user input;
- Guides the user through a basic or detailed forage budget;
- Stores rainfall records;
- Stores stock numbers (converts to Adult Equivalents, displays current stock on Land Condition reports, and can import figures to demand section of forage budget);
- Directs users to their monitoring sites using GPS;
- Helps the user identify their land type(s), using the land type mapping of Queensland; and
- Backups all information securely on the internet, which is only accessible by the user.

Importantly, each utility within the app can be used autonomously, or all the information and records can be linked to detailed reports.

The app was designed to be visual, logical and prompted for ease of use and importantly, to work without the need for 3G/4G phone reception.

Stocktake Plus has been developed specifically for graziers and agri-advisors in northern Australia (Queensland, Northern Territory and the Kimberley and Pilbara of Western Australia), but has partial functionality elsewhere. Users in other areas can establish their own monitoring sites and produce reports in the same manner, however, the reports will not calculate region-specific pasture growth and long-term carrying capacities. Forage budgets, rainfall records and other reports have full functionality irrespective of user location. The forage budgeting component can be applied to any region provided the user can estimate a starting dry matter yield.

More detailed information on app functionality and grazing land management principles is available on the Stocktake Plus webpage www.stocktakeplus.com.au.

The Stocktake Plus app is available on both Apple and Android app stores at no cost.

a)   Clarified final specifications with app developers

Before contracting the app development company, the project team met with Fresh on two occasions, in person and teleconference, to clarify specifications for the project. We demonstrated the Stocktake software and talked about future users (graziers predominately in northern Australia) and their requirements based on our preliminary investigation project. Our aim was to ensure that the development company completely understood the scope of the app and the needs of the target market. This was an important step to ensure development costs were accurately budgeted and that the app would be user friendly.

Assembling a relatively complex set of decision support tools as an app was ambitious compared to starting with a simpler, single function app. The Stocktake Plus app was scoped to be a complete grazing decision support tool, making the practices of both land condition monitoring and forage budgeting less cumbersome and more intuitive. As such, the project team focused on simplifying the existing Stocktake package and, where possible, add supplementary tools (e.g. GPS). Time will tell if this was the best approach.

The overarching requirement requested of the developers was for an instinctive design within the app, so the seemingly complex practices and their various support tools were logical, and self-prompted for ease of use, even by a novice user. The project team wanted, where possible, each tool (forage budget, rainfall, land and stock monitoring) to be able to be used autonomously. This rationale aimed to increase the appeal of the app to users. The app should thus appeal to someone who just wants to keep their rainfall records, right through to someone who wants to keep all records and link them into high level grazing reports for their property.

All these requirements were successfully achieved by managing the design specifications within the project. There was one area of the scoping process that was not achieved to our original specifications, that being the web-based version of the app. Basic functionality of the app was proposed to be replicated on the webpage, allowing clients who do not (yet) have a smart phone or tablet to still use all the decision support tools within the app. This aspect of the specifications was linked to the webpage and dashboard application, where the users can securely back-up and manage their data. In February 2013, Fresh and MLA renegotiated this requirement. The result was to not develop all aspects of the web-based functionality (see milestone 3.2.1). The project team and MLA did not consider this a significant impediment to adoption, but rather that it followed the technology developments and precedents in this area (of not having an equivalent web format). Therefore, additional time and resources within the project budget was spent on completing the Apple and Android apps, the web page and dashboard application.

The value of detailing the scope and functionality of the app early and in detail should not be underestimated. This process took a considerable investment of time, before this phase of the project commenced. This was particularly important for app 'first-timers' (like this project team) as it is difficult to be exact about every aspect of the app's specifications.

b)   Instructed and supported Fresh throughout development

Providing context, and all necessary information, tools and solutions required to meet specifications
Project management ensured the Stocktake Plus apps and associated webpage met technical, practical and useability specifications.

Together with testing the various versions of the app, this task took considerable more time and energy than the project team initially anticipated; however, the end product benefited significantly from this investment.

The project team met with Fresh, in Brisbane, on three occasions:
27.07.12 – Wireframe meeting
25.09.12 – Version 1 Apple App demonstration and discussion
16.11.12 – Version 2 Apple App demonstration and discussion

Throughout the nine months of development both email and phone communication were used for project management, at least twice weekly, between the project team and developers. A 'Basecamp' project management website was also established and utilised throughout the project.

Technical colleagues within DAFFQ, FutureBeef partners and other Queensland government departments were all engaged by the project team, at various stages in the project, to ensure the supporting tools and information within the app represented the latest, evidence based R,D&E. This work has been undertaken on the 'good-will' of these partners, with staff time provided in-kind, to ensure the best possible decision-support tool for industry.

To appreciate this aspect of the project, what follows are descriptive notes about the main Stocktake Plus inbuilt support tools.

- Spatial land type mapping for Queensland (QLD)
The advantage of incorporating the land type mapping into the Stocktake Plus app was that, traditionally the first challenging step in land condition monitoring was adequately describing the land type which the monitoring site represents. This first step allows the land type to be matched to the available pasture growth models, and to calculate appropriate long-term carrying capacities for the site or paddock.

The land types of QLD spatial map layer had been developed by another Queensland government department and were provided, after discussion surrounding use and limitations, to the project team.

The issue with this data was file size and how the Stocktake Plus app was going to 'read' the map. It was determined that the only solution was to break the map down to a file size compatible with the average device. This was successfully achieved thanks to colleagues at Department of Science Information Technology Innovation and the Arts (DSITIA), through their FORAGE webpage, where a solution was already partially available and adapted for our use. Most smart devices (except the iPad mini) have embedded Global Positioning System (GPS) chips, so there was an opportunity for the device to read the 'attributes table', behind the map layer. Thus even without the need for 3G/4G network connection, the app can relate its current location (using the GPS) to the map layer, thus listing the land type (or up to 5 land types) that may apply to that point.

For Stocktake Plus users accessing the land types of QLD spatial layer is an optional process incorporated in their user account set-up and registration process. Within this process the user specifies their lot on plan number(s) and the Stocktake Plus system accesses the FORAGE webpage and downloads only the map component for that lot on plan (allowing a suitable buffer area around the lot on plan) to the users account, and thus device.

Where the mapping is not available or reliable this function defaults to the full land type list for that region, so the user can choose the most appropriate land type based on their assessment.

This feature will be a significant improvement for the user. In the future, other states may have similar mapping that the app could access.

- Land type information for northern Australia

As noted above, determining the right land types is the first hurdle for users. Within the app we have collated land type descriptions for all available land types across QLD, NT and Northern WA. This information has been drawn together from various sources by the project team and summarised to suit the smaller screens (of phones or tablets) and embedded into the app. Thus, the user can get a photo and basic description of each land type when selecting their land type for their respective monitoring site. Links to the full descriptions are also within the app.

- Pasture growth models

Sitting behind Stocktake Plus is output from the pasture growth model, GRASP, for a large number of the land types and climate locations across northern Australia. The current and potential pasture growth figures, along with the current and potential carrying capacities within the Stocktake Plus reports, use the information from these pasture growth models, combined with the information the user has entered on land condition (ABCD), tree cover and density (Tree Basal Area, TBA) and paddock/site characteristics.

Pasture growth models (PGM) have not been completed for all locations and all land types. For users outside northern Australia or in areas not yet completely modelled, there is the option to use an 'unknown' land type. This simply means pasture growth and long-term carrying capacities cannot be reported, however all other monitoring information recorded by the user is available in their reports.

Since the last update of the Stocktake original software (in August 2010), there has been a significant amount of GRASP modelling, and refining of existing models completed for northern Australia. The launch of the Stocktake Plus app was an opportunity to refine the pasture growth model output used in Stocktake Plus and ensure consistency with recent advances. Giselle Whish (DAFFQ) and John Carter (DSITIA) completed this work, taking them approximately two months. The Northern Territory (NT) and Western Australian (WA) FutureBeef partners were approached to include their latest modelling, however declined at this stage due to other commitments, instead requesting all existing models be removed (until they can be updated). The models for NT and WA will be added to in future updates of the app, once made available to the project team.

The PGM output was specified as a dynamic component of the app with the developers. In the future, the Stocktake Plus coordinator and/or administrator may upload new modelled output as it becomes available and this information will automatically be pushed to all user accounts as an update (another impressive improvement on the previous version of Stocktake software, where there was no control on the PGM version being used).

- Ground cover and pasture yield photo standards

Estimating ground cover is one component of the land condition monitoring that has again been made easier for the user by embedding, at the appropriate stage in the

app, a series of ground cover photo standards. The user can use these as a guide for estimating ground cover.

Pasture yield photos allow the user to visually estimate start yield for forage budgeting. The full set of available pasture photo standards (by pasture community for northern Australia) has been embedded into the app.

As more photo standards become available, these may be incorporated without too much effort (expense) by the developer, as we specified that these aspects of the app design would be 'semi-dynamic'.

- Carrying capacity and forage budgeting calculations

The development of the Stocktake Plus app also provided an opportunity for peer review of the carrying capacity and forage budgeting formula used in the original Stocktake software. Colleagues in DAFFQ, particularly David Phelps (Principal Scientist, DAFFQ), worked with the project team to ensure the formulae used were the most appropriate. These changes were implemented and documented, resulting in a more accurate decision support tool.

Stocktake Plus webpage and 'Dashboard'

Content was prepared and reviewed for the webpage, including information about the app, how users can get the most out of the app, other resources and Frequently Asked Questions (FAQ). All these areas can be added to and improved by the Stocktake Plus coordinator and administrator over time and as they get feedback from users, post launch. All content was reviewed by an editor in DAFFQ and the FutureBeef Manager and MLA, to ensure accuracy, readability and consistency with the FutureBeef style and existing content.

The Dashboard section of the webpage, allows the users to login to their account and store and manage their Stocktake Plus information. Within the app itself users can only display their latest monitoring information. Showing all monitoring information within the app could mean substantial data storage within the device. By logging in through the dashboard, users can access (and download as either PDF or CSV files) all their information. They can also share property data with other users and/or devices.

The project team tested the dashboard application in early April 2013 prior to launch and were satisfied with the functionality. Due to timing of development, this product could not be tested with producers, however any errors reported post-launch should be fixed in the 90 day warranty period offered by Fresh.

c) Worked closely with Fresh, MLA, FutureBeef and DAFFQ to meet specifications and expectations

The Stocktake Plus app was the first decision support app tool for all the project stakeholders. It was also one of the first products to be branded under the FutureBeef collaborative arrangement. The project team prioritised communication with the FutureBeef management committee, with help from Krista Cavallaro (FutureBeef manager, DAFFQ), to ensure that name, branding, style, legal disclaimers and promotion/communication was appropriate and coordinated. As this was new for all stakeholders, unexpected delays were encountered in the project while seeking partners' approvals which contributed to the delayed launch. However it was important to have all partners satisfied with content and branding.

d) Rigorously tested the various versions of the app (internal, project team testing)

Significant time and effort has been invested in testing, refining and retesting the Stocktake Plus app and webpage. Project leader, Jane Pryor and collaborator Steve Banney provided constructive feedback to Fresh throughout development, on at least a twice weekly basis between September 2012 and just prior to launch in April 2013.

The development process focused on the Apple app initially. Once that app design and functionality was defined and tested, development started on the Android app. The web-page content and Dashboard application was prepared and edited by the project team in cooperation with Fresh towards the end of the project.

It was determined by the project team, early in the project, that they needed to be satisfied that the app was technically correct, logical and practical before demonstrating to peers and/or industry (end users). This process took substantially longer than anticipated. It wasn't until January 2013 that the app was at an acceptable standard for demonstration. In February 2013, the app was demonstrated to and tested with industry (see below). Ensuring the app's functions and technical aspects were correct before taking it to external parties for comment meant that they could focus on the useability of the app rather than being frustrated by errors, illogical processes and technical glitches.

The project team underestimated the time and resources required to supervise and test the app as it was developed. A significant amount of unbudgeted, in-kind time was required (for example, the FTE equivalent required by the project leader was approximately 0.5 rather than the budgeted 0.2). The laborious and repetitive nature and extent of this process should not be underestimated for future app developments.

e) Organised and supervised testing of the Stocktake Plus app with producers, stakeholders and extension personnel

Throughout January, February and March 2013 the Stocktake Plus app was demonstrated and tested by as many producers, stakeholders and extension peers that the project team could engage. Overall, 81 producers and 36 agency personnel/stakeholders provided comment on the app. Demonstration webinars, on-property demonstrations, and presentations at field days and forums were all used to gain feedback from stakeholders.

Detailed notes on feedback from these demonstrations/testing are attached in Appendix 3. Overall, feedback on the app was very positive. Those who had previous experience with the Stocktake process and software were very impressed by the improved operations, inbuilt support and overall ease of use created in the Stocktake Plus app. Those not previously exposed to Stocktake were also impressed by all the functions the app and how it made the practices of land condition monitoring and forage budgeting more achievable (and easy). For some people, Stocktake Plus was their first exposure to apps and 'smart' devices. Surprisingly, even some older members of the industry were off to upgrade their phones to 'smart phones' so they could utilise the Stocktake Plus app.

There is substantial interest in the Stocktake Plus app from Natural Resource Management (NRM) groups and other advisors across northern Australia. Those shown the app were very supportive and wish to use and promote the tool with their clients following launch.

f) Investigated any hosting and ongoing maintenance costs

A critical component of any technology development is ongoing maintenance to ensure full functionality for most users, responsiveness to industry feedback and opportunities to value-add are considered.

Maintenance has two components:
1. Changes to data or structures.
Examples of this include: options to include new functionality (opportunities to link with other tools, key messages, share data with other apps etc), or changes in formula behind the app, or changes to structure of supporting information within app (pasture growth tables, land types etc). Furthermore, this would include any 'errors' within the current specifications that is not picked up in the 90 day warranty period, post-launch offered by FRESH.

2. Changes to operating systems.
For example: changes to system architecture, new Apple or Android hardware or software that result in the app needing to be modified to be compliant.

Hosting of clients data on a secure server is also an additional and ongoing cost that needed to be considered by the project team, MLA and DAFFQ.

Through this project, the project team investigated, discussed and presented options to address these ongoing costs. The costs and options were fully documented in Milestone report 3.2.1. The outcome of the discussions amongst the project team and stakeholders was to develop a third phase of the project to promote and evaluate the adoption and impact of the app, whilst covering these costs, as fixed costs for a period of three years. At the time of this final report, a project proposal was being considered by DAFFQ and MLA to meet these needs.

g) Recommendations for purchase cost and strategy for promotion and support through FutureBeef

The impact of the Stocktake Plus app will be measurable by adoption of the tool and changes in producer practices and on-ground outcomes. It is expected, and survey results from the preliminary investigation (Hamilton & Banney 2011) predict, that a greater number of producers will assess their land condition and undertake forage budgets leading to more proactive grazing management decisions. To help reach these adoption targets, it was recommended by the project team in consultation with industry and MLA that the app should remain free to users, thus removing any willingness to pay obstacles which may limit adoption (see Milestone report 3.2.1 within B.NBP.0693 for further information).

The integration of the app within the FutureBeef extension activities will ensure industry and stakeholders get the most value from the app. While at the end of this project, there was no formal technical support structure within FutureBeef for the Stocktake Plus app and webpage, the value of the tool for extension work, particularly in the Grazing Land Management (GLM) area. Therefore, the app will be supported in DAFFQ informally by technical staff, the Stocktake coordinator and a member of the eExtension team. It has been proposed that this strategy is formalised through the proposed third phase of the project (pending approval with MLA and DAFFQ).

Stocktake training workshops will continue to be delivered to industry as part of the FutureBeef extension, however DAFFQ will no longer provide support for the previous Stocktake software (version 2). The Stocktake Plus app will be promoted instead. Additional support resources may be developed and incorporated in the Stocktake Plus website as part of ongoing GLM and Grazing BMP extension efforts. See milestone 3.2.1. and appendix 5 for further information.

Stocktake Plus and other apps/decision support tools
Before and during the development of the app, the project team attempted to keep up-to-date with other agricultural apps (for example iHerd, InSolutions, CliMATE) and new technology relevant to northern Australian graziers (like that being demonstrated in Precision Pastoral CRC Project). Given many of these app/tools are only in their infancy, not much could be drawn from their experiences, nor was it easy to create direct linkages to outcomes or data.

The project team has considered that users may want to share data between tools in the future. Through the Dashboard application, data can be exported (and potentially imported) as CSV files into excel or other programs. This creates opportunities to explore these options. The project team, however, cautions compromising the functionality of the app to achieve this objective.

From our observations of the iHerd app, Will Wilson (developer of iHerd) is keen to continue discussions about the links between iHerd and Stocktake Plus, it was 'clunky' and we do not believe that the herd data would be easily transported into Stocktake Plus or visa versa. That is not to say that the information from both apps does not complement each other.

Future opportunities to extend the use/adoption of Stocktake Plus include:
- Supporting users in Southern Australia with comparable inbuilt support tools (land type / soil mapping and information and pasture growth modelling).
- Exploring the value of importing Bureau of Meteorology rainfall information (to complement rainfall records kept by the user) and/or remotely sensed information (Precision Pastoral CRC) related to climate and live weight gain of grazing stock (measure through walk over weighing).
- Investigating further inbuilt support tools or direct links to (regionally specific) apps for pasture and weed ID.
- Incorporating predictions of animal live weight gain as part of the forage budget utility, providing evidence based data is formulated and agreed upon by the R,D&E group.

5. Conclusions

The launch of the Stocktake Plus app represents not only a significant step forward in pasture management decision support tools for northern Australian graziers but also a significant R&D investment in the app itself and the supporting tools and resources that underpin its functionality. The Stocktake Plus app has been a generational leap, making the grazing BMPs of land condition monitoring and forage budgeting more accessible, immediate and instinctive.

The key messages promoted to industry through the Stocktake Plus app are not new. The practices have been acknowledged and supported by industry and agri-advisors, the difficulty has been the relatively low level adoption of these practices. Stocktake Plus is a new 'vehicle' for promoting these messages with the aim of improving adoption. The success of the Stocktake Plus app will be measured over time in adoption of land condition monitoring and forage budgeting.

It is hoped the multi-functionality of the app will help entice producers to start using the app for one or more of its several utilities, and then adopt the other practices once an understanding of their value and process is gained. This appreciation and understanding may be achieved through the FutureBeef extension and/or the Stocktake Plus webpage.

Overall, the project was rewarded from the selection of developers to work on this app. The development team were visionary in implementing the specifications of the app and webpage in the most intuitive way for our target market. The end product from this project has exceeded the expectations of the project team in terms of functionality and useability. The success of the Stocktake Plus app will need to be further evaluated, and will be followed with great interest by the project team, stakeholders and various interested parties.

6. Recommendations

Note: Within the contract (B.NBP.0735), Fresh have a 90 day warranty period, post-launch, that allows any errors within the project specifications to be repaired. The project team should give special attention to prioritise any feedback coming from users in this warranty period. Once prioritised, this feedback should be brought to the development team's attention of immediate action.

Recommendation for Phase III project – Extension, evaluation and scoping
The project was originally proposed with a post-launch phase of extension and monitoring and evaluation, however this component was removed from the project prior to commencement, to reduce the overall project cost. The success of the Stocktake Plus app as a decision support tool and extension vehicle for key grazing BMP will be measured by industry use of the app, and adoption of these practices. As such, without this additional phase of project work, little can be learnt about the value of this investment.

The project team has proposed a low-cost, three-year project to continue the work commenced in this project (proposed to start May 2013). The aim of which is to extend and evaluate the impact of the Stocktake Plus app, whilst also scoping the role for other apps as decision support tools within FutureBeef. As part of this proposed project a suitable level of maintenance and the hosting costs for user data has also been included, so as to keep the app fully functional, responsive to user feedback and free to all users for the length of the project.
Furthermore, the project team will be able to explore some of the possible value-add opportunities for the Stocktake Plus app. At the time of this final report, the proposal for this work was being considered by DAFFQ and MLA.

Assess value-add opportunities without compromising the original functionality of the Stocktake Plus app

Once users become more aware of the potential of the Stocktake Plus app, thoughts of 'value-adding' opportunities generally arise. Many of the ideas could be cost-effectively incorporated, however the project team cautions against making the app a 'jack of all trades and a master of none'. Focus should be kept on the purpose of the app in promoting land condition monitoring, forage budgeting, to a lesser extent record keeping and pasture spelling. If phase III of this project is approved, the Stocktake Plus coordinator and administrator will be in a good position to prioritise these 'value-adding' opportunities with users, stakeholders, extension and grazing land management scientists.

Prioritise ongoing maintenance

As highlighted in the results, there are two main aspects to maintenance. Working with applications, software and dynamic technology requires a commitment to ongoing maintenance. This cannot be avoided if usability, responsiveness, relevance and longevity of the application are to be achieved.

The inbuilt support tools within the Stocktake Plus app are also continually evolving. The project team has specified what aspects of the app are dynamic, semi-dynamic and (predominately) static. The main dynamic component is the pasture growth output. Work with GRASP modellers will need to be ongoing to ensure the modelling output can be seamlessly incorporated into the app. Semi-dynamic aspects, will involve some minor work by the developers, and include additional or changes to land types, pasture and ground cover photo standards. Static aspects, such as the formulae behind calculations, report templates etc will require additional work from the development team and would need to be prioritised within the maintenance hours negotiated in the proposed Phase III project.

7. Appendices

7.1. Links to Stocktake Plus website

Stocktake Plus webpage www.stocktakeplus.com.au
Register an account www.stocktakeplus.com.au/register
Login to Dashboard www.stocktakeplus.com.au/login

7.2. Stocktake Plus app demonstration, including comprehensive screenshots from the app

Attached pdf document.

7.3. Producer and stakeholder engagement feedback

Testing of Stocktake Plus – Version 2.6 (20130221. 20/02/13)
Demonstrations to producers throughout February/March 2013

The project team was able to demonstrate the app to seven businesses around the Goondiwindi/Inglewood/Texas region, thirteen producers in the Central Queensland area, 16 young producers in the Charters Towers district and 45 producers in the Mackay, Reef Catchments region during February and early March 2013.

Additionally three webinars with stakeholders, including DAFFQ and FutureBeef partner agency staff, NRM groups, Agforce and MLA were run, 36 people were involved in these webinars. Feedback was noted and viable solutions implemented, where possible.

Overall the reaction from these producers and stakeholder was overwhelmingly positive, with most very impressed at the functionality and ease to use. Some detailed feedback from producers follows, with comments and resulting actions in dark blue.

Andrew Wilkie, Objective Livestock Marketing, Goondiwindi
Andrew assesses and markets cattle for producers in the region. He has an agricultural degree and has worked as a rangeland officer in Alice Springs and is originally from the Goondiwindi district.

Monitor, Land Condition, Record, Tree Area
If you enter 0% tree area, it will not appear on the record page. – Issue forwarded to developers and addressed.

Monitor, Land Condition, Record, Landscape image and Trayback Image
Need to explain what Landscape and Trayback images mean. – Issue forwarded to developers and addressed. An information icon has been included in the app that is displayed when users take these monitoring photographs. Information and images direct users on the best way to take these images.

Calculate, Forage Budget, Time
Andrew thought there should not be a **Time To** entry. He thinks the start time should be part of the Supply page and then the app calculates the end date based on the available pasture and stock numbers. Andrew comes from a cell grazing background and had a major problem understanding the current process with inputting an end date in the budget. He thinks the end date should be left for the app to calculate. I can understand his rationing, however this is major shift from the current process. Something to ponder going forward. Understand this thinking, app does come to that answer, it just means the user has to interpret it.

Photo Standards
The photo standards are listed alphabetically which is good but when you first enter **Photo Standards**, the first **Pasture Community** that always comes up is traprock. Can this be changed to reflect the alphabetical listing and start with alluvial? – Issue forwarded to developers and addressed.

Willingness to pay
Thinks an annual registration fee of between $50 and $100 would be acceptable. Andrew was trying to think of a way he could incorporate the forage

budgeting/monitoring into his livestock assessment business as a service to his clients.

Richard and Janet Doyle – cattle (10 km south of Boggabilla)
Calculate, Forage Budget
Asked if it was possible to have a forage budget for the entire property. Richard is a cell grazer and would like to see it do what a grazing chart does for the whole property. Steve Banney said the user could do individual forage budgets for each paddock but there is no function to sum these into one report. This summary could also be useful but could be confusing if users tried comparing such a summary with the assessed current carrying capacity for the property? Something for future, summary could easily be calculated from dashboard CMS. If the user did the whole property and compared to LTCC it would be confusing. If they have all their paddocks in the forage budget they can essentially get this information. This feedback also came up with a producer using a rotational grazing system (Greg Oswald, 'Granville', near Rockhampton). The solution was to do a forage budget for the 4-5 paddocks making up the rotation, allocate stock accordingly and monitor throughout the grazing period, as additional growth during the 'rest' periods and herd impact on detachment may affect total grazing days.

Grazing Charts
Richard asked if and how the app could be linked to grazing charts. Phoenix have a package called Phoenix Grazing which includes an electronic grazing chart.   This is not an option worth considering. There are too many differences in the way the Phoenix system calculates grazing days etc. Stocktake Plus is one grazing decision support tool on the market, there are others and that is to the benefit of the industry, they need to do their research on which best suits their needs. .

Wes Sloane – cattle and sheep (west of Goondiwindi)
Monitor, Record, Land Condition
Can we include a short blurb to explain the A, B, C, D land condition rating. Would love to but again, we are limited in what we can fit on the app (given small screen size). The FAQ/Support section on webpage has great detail on this topic (and others) and the app directs users to visit the Stocktake Plus webpage if they require further information.

Calculate, Forage Budgets, Demand
When you go to **Load from existing stock record**, the tick in the circle does not happen. The tick stays on the **Edit stock record**. – Issue forwarded to developers and addressed.

Reports, Site Land Condition and Stock
Wes asked if in the future, the app could create charts that show trends in **Site Land Condition** and **Stock** over time. From the web server, use data can be managed as a CSV, so they can import to excel and graph. Again, something to keep in mind for future.

Calculate, Forage Budget, Demand, DMI
The latest research shows that phosphorous supplementation over the green season will significantly increase feed intake and that is the primary reason why animal productivity improves. Should we rename the Protein supplement tag to Protein or Wet season Phosphorous supplementation. The project team would need to find out if the average increase in DMI from phosphorous supplementation is 15% or thereabouts. Possible. Would need further research.

Ron & Kerri Glasser – stud and trade cattle (55 km NE Goondiwindi)
Properties, Paddock, Monitoring Site, Site Attributes, A Condition TBA
Need to explain what *A Condition TBA* means beneath **Site Attributes -** Issue forwarded to developers and addressed.

Properties
While moving around sections of the app and you go back to **Properties**, I am finding that the star next to the property name has moved to another property on its own accord. – Issue forwarded to developers and addressed.

Calculate, Forage Budget
A couple of people asked if the Forage Budget calculations could be twigged to budget feed when they have a summer or winter forage crop, e.g. forage sorghum, oats. This can be done. A FAQ and response to this query has been included on the Stocktake Plus webpage.

Calculate, Forage Budgets, Demand, DMI
Where it says DMI, can this appear as Dry Matter Intake (DMI) as not many people recognise what DMI stands for. – Issue forwarded to developers and addressed.

Reports
On this version, there are questions about the accuracy of the formulae for calculating potential Pasture Growth (PG) and Carrying Capacity (LTCC). This is hopefully fixed in subsequent versions. Issue forwarded to developers and addressed. All calculations correct at time of launch. PG and LTCC will often be lower than the user expects, because they are long-term conservative averages (further detail in the FAQ section of the webpage – Interpreting your results). The PG Models will also improve in accuracy over time.

Willingness to pay
Ron and Kerri thought they would be prepared to pay up to $50 per annum to be a Stocktake Plus subscriber. They use Herdmaster and have to pay $300 p.a. to subscribe.

Scott Withey – goats and camels, (50 km NE Texas)
Monitor, Stock Records, Record
Asked if goats could be included in list of stock classes – They go in 'other' or in as sheep. The AE and demand works out the same as sheep (This information always sparks the debate that goats eat different sections of the pasture/shrub community than sheep, but we need to keep in mind this is a decision support tool, the user needs to interpret the results)

Calculate, Forage Budgets, Demand, DMI
When entered Other (for goats), no DMI is calculated, i.e. kg DM/head/day. It does show Demand in kg DM/AE/day. – Issue forwarded to developers and addressed.

Account setup
Scott asked if he has three people using the app on several properties and at different times, should he have one account and three users or have three accounts and three users. What will work best in practice? – Issue forwarded to developers and addressed. Section on webpage also addresses this FAQ.

A similar question came up when demonstrating to NRM groups and advisors.

It was decided that if multiple people all used the one account, they would very quickly end up with too many properties/report etc to have to scroll though and if they all had map data attached it would we too much space in their device. Users can 'share' properties through their dashboard CMS.

Apple and Android synchronisation
Will the information stored on say an Android phone be able to be downloaded to an Apple computer and visa versa? I think not. Yes. As all information is linked to the user account.

Pasture identifier
Asked if in the future, the app could include images and text to help identify pasture plants.
This is possibly a whole different app, however it would be great if it was built linking to Stocktake Plus. Worth keeping in mind.

Andrew Gray – cattle (15 km north of Texas) and Geoff Elliot – sheep (30 km NE of Texas)
Geoff came to Andrew's property to see the app. Geoff also is coordinator for the Texas/Inglewood Landcare group.

Dendrometer
On my ipad mini, the dendrometer is still underestimating tree diameters by 5-10%. – Issue forwarded to developers and addressed. Given the various screen sizes and camera specifications between devices, at time of launch the dendrometers is only optimised for the iPhone 4+ devices. Those on other devices are cautioned and encouraged to use other techniques for measuring TBA.

Calculate, Forage Budgets, Supply
Maybe an explanation on the bottom of this page to briefly explain what should the **Residual Yield** be – there is no guidance or rule of thumb on what this should be in kg DM/ha. – Issue forwarded to developers and addressed.

Calculate, Forage Budgets, Results
As we discussed the results can be meaningless when there the supply exceeds demand by a huge factor. When this happens the producer reads some enormous number of head and a ginormous number of days. Can this be improved by limiting the number of head and days? The importance of the *Feed eaten as proportion of palatable pasture* is not highlighted. The user does not always scroll down far enough on this page to see the note on what this means. It would be great if when this indicator exceeded 30%, the app gave a warning to say please read below or something similar. – Issues forwarded to developers and addressed.

Willingness to pay
Both Andrew and Geoff thought the app subscription would have to be under $100 per year. They thought the subscription cost to have the accounting package MYOB was about $200 per year.

Community Landcare Grants
Geoff is keen to include the use of the app in a grant application they are writing under a sustainable agriculture funding application.

7.4. Examples of media released

Written by: Andrea Corby   **Date: 26 February 2013**
Authorised: John Chapman   **Date: 8 March 2013**

Queensland Government

Department of Agriculture, Fisheries and Forestry

April 2013
App a first for FutureBeef and north Australia graziers

Forget the pen and paper, GPS, camera and land type sheets – a smartphone and a new free Stocktake Plus app are all a grazier needs to determine stocking rates and carrying capacity in any paddock.

The Stocktake Plus app was developed after extensive industry consultation by the Department of Agriculture, Fisheries and Forestry (DAFF) with funding from Meat & Livestock Australia (MLA). It is designed to be a practical, work-anywhere (including outside telephone range), decision support tool.

Promoted through the *FutureBeef Program for Northern Australia* with program partners DAFF, Northern Territory Department of Primary Industry and Fisheries, Department of Agriculture and Food Western Australia and MLA, the app is now available for use by all northern Australia beef producers.

MLA's NRM Project Manager Cameron Allan explained that 25% of producers* are now on mobile devices and that is rapidly growing.

"With the exponential growth in uptake of mobile technology, we realise there is an opportunity to put practical tools into the pockets of producers so they have ready access to critical information when and where they need it," Mr Allan said.

"The Stocktake Plus app puts a property's pasture records at your fingertips. The app gives you the ability to make informed on-the-spot decisions about stocking rates and paddock management - these critical to ensure longer term condition and productivity of the grazing business."

DAFF extension officer Jane Pryor led the development of the app, in conjunction with collaborator and beef industry consultant, Steve Banney.

"For a grazier standing in his or her paddock, the app uses GPS technology to assess and report the land type," Ms Pryor said.

"Then, through a guided process, a grazier can use the app to monitor their soil, pasture (quality and quantity) and woodlands to come up with a recommended long-term carrying capacity and a seasonal, or shorter-term, forage budget – or both.

"The app has a number of functions that can be used independently or together, such as tools to undertake a forage budget, monitor land condition, track stock numbers, and keep rainfall records."

Ms Pryor said the design of the app took into account feedback from graziers on what functionalities it should include.

"The Stocktake Plus app has the ability to store enterprise-specific information across sites and years, email reports and is securely backed up on the Stocktake Plus server," she said.

"This is a secure environment that is not accessible to anyone but the user, but if a smartphone is lost or broken, the information is not lost."

A Stocktake Plus website supporting the app will serve as the platform for users to register an account, back-up their information and feature 'how-to' videos and factsheets so they get the most out of the app.

The Stocktake Plus app is available (from April 19) at www.stocktakeplus.com.au or via the Apple and Android app stores.

Media: Andrea Corby phone: 4760 1548

*MLA digital assets survey, 2013

Value in budgeting, the new FutureBeef Stocktake Plus app can help
Prepared for Northern Muster Newsletter – April 2013

- Help is available to balance pasture supply to animal demand through the new Stocktake Plus app, the first FutureBeef app for northern graziers
- At this time of year it is worth considering how much pasture you have till break of season, usually mid to late January for north Queensland, and how that matches to the animals you have on hand.
- With such a varied season for northern Queensland (floods, fires, above and below average rainfall across the district) it is worth doing a forage budget to see if you can capitalise on extra pasture or if you need to lighten the load.

The Stocktake Plus app has been developed after extensive industry consultation, and is designed to be a practical, work-anywhere (including outside phone range), decision support tool to help with some key grazing land Best Management Practices. The Stocktake Plus app is available for both Apple and android devices (from mid-April 2013), and best of all it is FREE to all users.

It's an initiative of the Queensland Department of Agriculture, Fisheries and Forestry through the FutureBeef program and Meat & Livestock Australia.

DAFF FutureBeef extension officer Jane Pryor led the development of the app, in conjunction with collaborator Steve Banney, who runs his own consultancy business.

The Stocktake Plus App:

- Assists in monitoring grazing land condition by logically guiding the user through the process, storing information, producing reports, including long-term carrying capacity calculations based on the information you enter
- Guides the user through a basic or more detailed forage budget
- Stores rainfall records
- Stores stock numbers – converts to AEs, displays current stock on land condition reports and can bring stock numbers through to the demand section of the forage budget
- Directs users to their monitoring sites using the GPS function
- Helps the user identify what land type they are on, using the land type mapping of Queensland
- All information is backed up securely on the internet (only accessible by the user).

Each function can be used independently, which means if you only want the forage budget functionality, you can do this. Similarly if you want to link all their information from monitoring stock, land condition and rainfall, you can do that too. The app was designed to be visual, logical and prompted for ease of use AND importantly to works without the need for 3G/4G phone reception.

More information can be found at www.stocktakeplus.com.au

Why is forage budgeting important?
Forage budgeting is a process for balancing forage supply (existing and anticipated pasture yield) and forage demand (how much the animals will consume) over a defined period. A forage budget allows landholders to calculate objective numbers to support their decisions based on observations and experience.

A forage budget can also help plan for seasonal variability in pasture quantity. For example, a forage budget may indicate that between May and January you can carry

400 Animal Equivalents (AEs[i]) in a particular paddock with a certain pasture yield. This gives you an option to either buy in more stock (to take your animal demand to 400 AEs) and/or devise a targeted sell-off plan if grass growing rain is not received by a specified date. This means you are selling your cattle earlier than those who decide to hold stock until seasonal conditions deteriorate further and animal condition declines. You are also taking better care of your pastures.

[1] 1 AE = a 450 kg dry beast maintaining its liveweight.

When should I do a forage budget?
Forage budgets are recommended for the end of the growing season (April or May for Northern Australia) or each time livestock are moved between paddocks.

The grazing period can be days, weeks, months or a season. A dry season forage budget is usually from the end of the growing season e.g. May, to a date when you are likely to have a bulk of fresh pasture growth e.g. mid to late January.
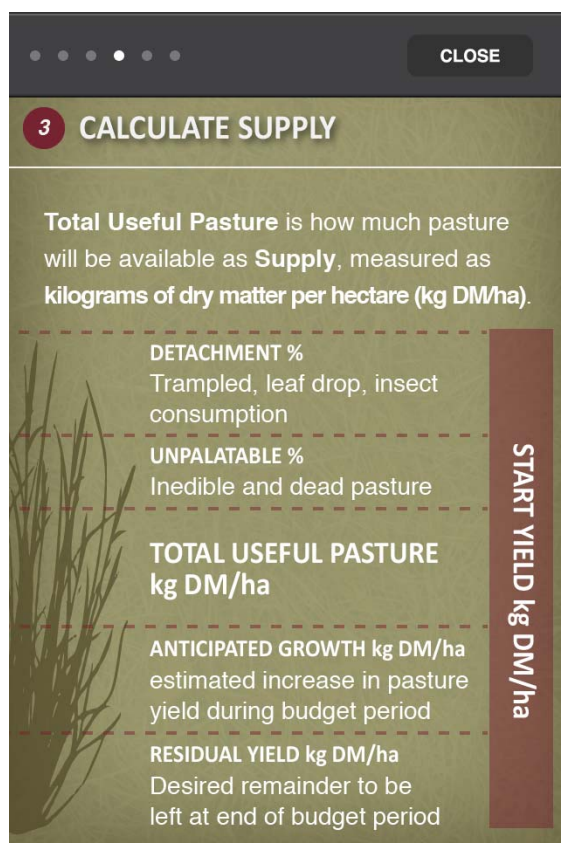
How do I calculate the forage budget?
Using the new FutureBeef Stocktake Plus app you will be guided through the process of completing a forage budget. The app has in built support and tools to help you get the information you need about your pastures to get the answers you want, immediately while you are still out in the paddock.

Results from a forage budget within Stocktake Plus include:
- how many days your current feed will last with the number of AEs you have.
- the number of AEs and/or current class of stock your paddock will carry to the end date

Then what?
Forage budgets are not a 'set and forget' tool, you need to continue to monitor both your pastures and livestock during the grazing period to ensure you have the balance right.

This information helps plan your stocking rate strategy for that paddock and grazing period, ensuring that animal productivity is optimised and land condition is maintained or improved.

7.5. Summary of Project proposal for FutureBeef Stocktake Plus App – Beyond Development: Extension and Strategy (submitted to MLA April 2013)

Background of Research Work

In 2012-13, an MLA funded project, B.NBP.0693 Phone app for pasture management – overview of development was completed by Jane Pryor and Steve Banney. Within this project Department of Agriculture, Fisheries and Forestry Queensland (DAFF Q) oversaw the development and launch of the first FutureBeef decision app for graziers in Northern Australia. This product, Stocktake Plus, represents the next generation of decision support tools, the next phase now is to ensure adoption of this tool and the Best Management Practices it promotes; land condition monitoring and forage budgeting to better match stocking rates to pasture available. The Android and Apple app were both launched in April 2013 and supported by the Stocktake Plus website.

B.NBP.0693 followed another 12 month DAFF MLA project, B.NBP.0668 (completed in 2011) which was undertaken to investigate the value and feasibility of developing a grazing land management application (app) for northern Australia using existing smart phone technology. Outcomes of this project set the specification and methodology for app development (within B.NBP.0693).

Project Description

The launch of the Stocktake Plus App represents not only a significant step forward in pasture management decision support tools for Northern Australian Graziers but also significant R&D investment in the app itself and the supporting tools and resources that underpin it's functionality.

The impact of the Stocktake Plus app will be measurable by adoption of the tool and changes in producer practices and on-ground outcomes. It is expected, and survey results from the preliminary investigation (Hamilton & Banney 2011) predict, that a greater number of producers will assess their land condition and undertake forage budgets leading to more proactive grazing management decisions. To reach these adoption targets, it was decided, during the development phase, by the project team in consultation with industry and MLA that the app should remain free to users, thus removing price/payment as a barrier to adoption (see Milestone report 3.2.1 within B.NBP.0693 for further information).

This third proposed phase of collaborative work between DAFF, MLA and the other FutureBeef (FB) partners, is aimed at consolidating the work done to date, ensuring extension of the Stocktake Plus app and developing a strategy for decision support tools and apps in the context of FB going forward. This third phase also allows for funds to be available to cover the hosting and maintenance required to keep the Stocktake Plus app fully functional, responsive to feedback from industry and free to all users.

The integration of the app within the FutureBeef extension activities will ensure industry and stakeholders gets the most value out of the app. Integration should include promoting the app through Stocktake and EDGE GLM workshops, Grazing BMP and Reef Protection and remote technologies projects. The app will be supported by concurrent developments in the FB e-Extension space including the 'YouTube' how-to video clips, the Stocktake e-learning package and also fit with outcomes the new FutureBeef training packages project (particularly in the Grazing Land Management patch).

Establishing a dedicated Stocktake Plus coordinator and administrator for three years (from May 2013) will not only ensure the app is embedded in the above FB activities but also allow for monitoring and evaluation of the impact of the app. A critical component of any technology development is ongoing maintenance to ensure fully functionality for most users, responsiveness to industry feedback and opportunities to value-add are considered. Maintenance has two components:

1.   Changes to data or structures. Examples of this include: options to include new functionality (opportunities to link with other tools, key messages, share data with other apps etc), or changes in formula behind the app, or changes to structure of supporting information within app (pasture growth tables, land types etc). Furthermore, this would include any 'errors' within the current specifications that is not picked up in the 90 day warranty period, post-launch offered by FRESH.

2.   Changes to operating systems. For example: changes to system architecture, new Apple or Android hardware or software that result in the app needing to be modified to be compliant.

Furthermore, this third phase of work allows future direction of apps and decision support tools within FB and MLA to be scoped and policy developed, as needed. This strategy phase is an important step that cannot be completed without the concurrent evaluation of the Stocktake Plus app and future 'value-add' updated to the 2013 version.

Objectives and Outcomes of Project

By 30 May 2016, achieve the following deliverables:
1. Stocktake plus app embedded in all relevant FB activities and training packages.
2. Evaluation of adoption and impact of Stocktake plus app over three years complete
3. Strategy for future direction of apps and decision support tools within FB and MLA documented within business plan.

Method

The project team's role in this project is to promote the Stocktake Plus app to industry and industry stakeholders by ensuring the app is integrated within the existing (and evolving) FB grazing land management program. To support users and prioritise and implement maintenance work and minor improvements (suggested by users) with assistance of app development company, Fresh. Furthermore the project team will be fundamental in scoping and promoting discussion and policy (as needed) with regards to FB and MLA's future direction on apps as decision support tools.

The project team will take the following steps to achieve the project objectives:

Project management

a) Document app usage and trends within agriculture / beef industry to help inform policy decisions of the FutureBeef Management Committee and future investment in apps and relevant decision support tools.
b) Promote the Stocktake Plus app to public sector and private beef extension providers through *FutureBeef Program for Northern Australia* and the communication vehicles of program partners (eg FutureBeef website, eBulletins, state agency and MLA newsletters, webinars etc) as well as face-to-face opportunities.
c) Integrate the Stocktake Plus app within relevant beef extension projects such as Grazing Land Management and Stocktake training packages, RD&E projects using GLM principles and the e-Extension area..
d) Monitor and respond Stocktake Plus app feedback, collating these for future product development and improvement.
e) Action 'small investment / big impact' refinements and improvements were appropriate and as budget allows.
f) Manage hosting and maintenance activities with app development company, Fresh. The contract for hosting and maintenance will be between MLA and Fresh but managed by project team within DAFF.
g) Monitor, evaluate and report on the effectiveness of the app with industry and stakeholders as a highly valued decision support tool.
h) Communicate project progress and app uptake to FutureBeef Program Management Committee (this is the first MLA/DAFF app investment for the northern beef industry).

Interest (IP proportions)

MLA	50%
Research Organisation	50%

This IP split reflects the precedent from the previous two phases of the project. The Stocktake Plus app itself is co-owned by DAFF and MLA. This reflects the previous investment by both organisations in the development of the app and the supporting tools and resources within the app (e.g. land type sheets and mapping, pasture growth models outputs, techniques for calculating long and short-term carrying capacities etc).

Milestones

Milestone Number	Achievement criteria	Due date
1	Agreement signed and project commences	30 May 2013
2	Annual progress report on Stocktake Plus app, extension and strategy recommendations (including interim plan for apps within FB and MLA until 2016)	30 May 2014
3	Annual progress report on Stocktake Plus app, extension and strategy recommendations	30 May 2015
4	Final report – Including recommendations for Stocktake Plus app and apps (generally) and decision support tools going forward (3 year plan)	30 May 2016