MINISTRY OF HEALTH
MANATŪ HAUORA

New Zealand Government

National Bowel Screening Programme

Benefits Realisation Plan version 1.2

2018

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Document approval

	Name / title	Sign-off date
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Document control

Document history

The Benefits Realisation Plan is a living document and is expected to be revised and updated annually as the programme to implement the NBSP proceeds through its lifecycle.

Version	Issue date	Author	Description of changes
V0.1	18/11/2016	Deborah Donkin	Initial version
V0 2	23/11/2016	Deborah Donkin	Updated with feedback from: Programme Manager, Programme Director, and Principal Advisor. Benefits classifications updated to reflect that some will be monitored by the NBSP and some will be subject to third party evaluation.
V0.3	24/11/2016	Deborah Donkin	Benefits and Disbenefits reclassified. Additional detail added around benefit measures.
V0.4	25/11/2016	Deborah Donkin	Feedback from Treasury incorporated to minimise the number of benefits that the implementation programme is monitoring.
V0.5	02/12/16	Deborah Donkin	Benefit's profiles updated and risks added.
V0.6	05/12/16	Deborah Donkin	Additional benefit added. Measures in the benefits profiles for D01, D02, D03 and B01 updated.
V0.7	14/12/16	Deborah Donkin	Action Point and Decision references added as part of handover. Executive Summary added.
V0.8	16/12/16	Deborah Donkin	Updated with the input from Dr Susan Parry, additional benefit added. Measure 3 for D03 and benefits summary Appendix removed
V0 9	20/01/17	Paul Mannering	Updated first sections (Exec Summary) with notes from Stephanie Chapman
V0 91	08/02/2017	Lara Penman	Updated benefit 1 and associated measures/dependencies, update figure 4.1
V0 92	16/02/2017	Demelza Halley	Language and consistency changes made throughout following Clinical Director final review
V0 93	4/04/2017	Helen Gower Susan Parry	Minor changes throughout
V0 94	5/04/17	Helen Gower Joyce Brown	Minor changes relating to quality standards
V0 95	06/04/17	Paul Mannering	APs removed, Footnotes checked. Formatting
V1.0	20/04/2017 27/04/2017	Paul Mannering Paul Mannering	Final updates, format and tidy up Minor corrections made as per NBSP Governance Group approval

Version	Issue date	Author	Description of changes
V1.1	5/04/2018	Helen Gower	Whole document reviewed. Minor changes throughout. Timelines realigned with extended implementation timeframe. Benefit B02 Measure 2 removed. Disbenefit D01 Measure 1 and 2 amended. Colonoscopy interval cancers moved to Measures for Evaluation.
V1.2	16/07/2018	Toby Regan	Major redraft and simplification. Removal of the benefits profiles to separate document.

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Executive summary

The Ministry of Health introduced a National Bowel Screening Programme (NBSP) into New Zealand in July 2017. The implementation of the NBSP across the 20 District Health Boards (DHBs) is being staged across four financial years. The main goal of the NBSP is to reduce the current mortality rate from bowel cancer by diagnosing bowel cancer at an earlier stage when it can be cured or is more treatable.

The key investment objectives are to:

- reduce mortality from bowel cancer and promote equity between population groups, especially Māori
- deliver bowel screening in a manner that is acceptable and encourages participation
- maximise benefits relative to any harm caused
- deliver a safe, high quality, nationally consistent National Bowel Screening Programme.

The New Zealand population are the direct beneficiaries of the screening programme. Through an initial faecal immunochemical test (FIT) carried out at home, eligible participants (aged between 60 and 74) found to have potential indicators of the disease will have the opportunity to have bowel cancer diagnosed by colonoscopy or computed tomography (CT) colonoscopy and be treated before symptoms of the bowel cancer are evident.

Equity for Māori is a key focus of the NBSP, as part of the Crown's obligations to the indigenous people of New Zealand as a partner to Te Tiriti o Waitangi. The Ministry has been working with a range of experts to consider how best to maximise health outcomes and equity through the design and implementation of the NBSP while ensuring that the benefits of screening clearly outweigh potential harms.

The benefits that the NBSP will achieve with appropriate and equitable participation, are:

- to maximise the detection of bowel cancers within the NBSP parameters
- an increase in the proportion of bowel cancers detected at TNM Stages I and II using the classification of malignant tumours (TNM), where T = tumour, N = number of nearby lymph nodes and M refers to whether the cancer has metastasized
- a reduction in bowel cancer mortality
- a reduction in bowel cancer incidence
- an increase in the five-year relative survival rate for bowel cancer
- to benchmark improvement with international comparisons (smaller variance from the Organisation for Economic Co-operation and Development (OECD) average).

Screening will allow more bowel cancers in the early stages (TNM Stages I and II) to be detected and treated. Screening will also identify adenomas that could potentially turn cancerous, which can also be removed during a colonoscopy. During the early years of screening we expect there will be an increase in the number of bowel cancers found and treated. Over time this number should fall to a predictable level. The increase in the number of early stage cancers and the subsequent potential decrease in numbers of later stage cancers will be monitored for the population that take part in the NBSP. This will help provide an early indication of the effectiveness of the NBSP. We will apply financial modelling and a set of assumptions to track the impact of these benefits against the costs of treating bowel cancer.

Once the NBSP has been running for more than 10 years, we expect to realise the benefits of reduced bowel cancer mortality rates, reduced bowel cancer incidences, and increased five-year survival rates.

We also expect an improved standing in the OECD for bowel cancer mortality by moving five percent closer to the OECD average.

The disbenefits that need to be mitigated are:

- any anxiety from participating in the NBSP for participants
- any adverse physical health outcomes from colonoscopy and the screening process for participants
- a widening of the equity gap for Māori bowel cancer mortality and survival rates.

It is very important that the benefits of the NBSP outweigh the harms it may introduce. Physical harms such as perforation of the colon or bleeding resulting from colonoscopy will be monitored across all DHBs to ensure that any adverse events are within an agreed tolerated limit. Measures of anxiety or psychological harm for participants are complex and it is not easy to document whether or not these harms have been minimised. The programme will monitor events that may introduce high levels of anxiety, such as unacceptable wait times and incorrect diagnosis, as proxy measures for anxiety.

The team will work hard to mitigate any potential inequitable uptake of the NBSP across different ethnic groups, levels of deprivation, and access to services based on geographic location of the participant. Bowel screening needs to be accessible to people eligible to receive the service, and this will be assessed via regular monitoring of participation rates by ethnic group, geographic location and deprivation group.

A review of the benefits will take place periodically to:

- assess the ongoing relevance of the benefits
- capture any emergent benefits
- discuss the rate of realisation and introduce corrective actions where necessary
- re-baseline the realisation schedule
- ensure responsibilities are being carried out as expected
- discuss the format and effectiveness of benefits reporting.

Benefits schedule

Code	Benefit	Measure	Quarterly reporting	Annual report, for two years ending June 2019, due March 2021	Annual report, for two years ending June 2020, due March 2022	Annual report, for two years ending June 2021, due March 2023	Programme 10-year evaluation 2033
B01	Maximise detection of bowel cancers within the programme parameters	Cancer detection rate	X	X	X	X	X
		Positive Predictive Value (PPV) of FIT for bowel cancer					X
B02	Increase in the proportion of screen detected bowel cancers detected at TNM Stage I and II	Proportion of bowel cancers diagnosed at TNM Stages I and II	X	X	X	X	X
B03	Appropriate rate of screen detected advanced adenomas	PPV of FIT for advanced adenomas		X	X	X	X
B04	Reduction in bowel cancer mortality	Bowel cancer mortality rate					X
B05	Reduction in bowel cancer incidence	Age standardised bowel cancer registration rate					X
B06	Increase in five-year relative survival rate for bowel cancer	Five-year relative survival rate					X
B07	Benchmarking bowel cancer mortality rate improvements with international comparisons (smaller variance from OECD average)	OECD information on New Zealand mortality rate from bowel cancer		X	X	X	X
D01	Anxiety arising from participation in the NBSP (for some participants)	Colonoscopy wait time	X	X	X	X	X
		Negative FIT interval bowel cancers		X	X	X	X
		Percentage of colonoscopies with no abnormalities found		X	X	X	X
D02	Adverse physical health outcomes from the screening process (for some participants)	Post-polypectomy perforations		X	X	X	X
		Post-polypectomy bleeds		X	X	X	X
D03	Widening of equity gap for bowel cancer mortality and survival rates	Participation rates for the FIT	X	X	X	X	X
		Uptake rates for colonoscopy		X	X	X	X

Methods and processes

This plan provides information on what the benefits are, and how and when they will be measured. The plan also covers the dependencies (participation rates in the programme, percentage of people with a positive FIT having a colonoscopy, and quality of service delivery), which may affect the outcome of the benefits. Responsibility for benefits is outlined in the two stages of benefit realisation – the implementation of the programme, and once the programme has moved into business as usual. Risks, issues, dependencies, and change management of the benefits are also covered.

No one benefit considered singularly is an indicator that bowel screening is working. All benefits must be assessed together for the cumulative impact.

The NBSP is expected to deliver four key benefits:

- improved health outcomes
- more cost-effective health care
- improved service delivery, including improved technology infrastructure supporting service delivery
- better social and economic outcomes.

The known disbenefits or adverse impacts of investing in the NBSP were identified in the implementation programme business case. While it is not possible to eliminate the disbenefits, we will try to minimise their impact. The measureable benefits and disbenefits are described in Table 1.

Table 1: Measurable benefits and disbenefits of the NBSP

	Screened population	Total population	Future evaluation*
Benefit	Maximise detection of bowel cancers, within the programme parameters	Reduction in bowel cancer mortality	Decrease in total bowel cancer treatment costs
	Increase in proportion of bowel cancers detected at TNM Stages I and II	Increase in five-year relative survival rate for bowel cancer	Contribution to society (estimated at s 9(2)(f)(iv) over the 20-year modelled period)
	Appropriate rate of screen detected advanced adenomas	Benchmarked improvement in bowel cancer mortality with international comparisons (smaller variance from OECD average)	Quality improvement to DHB endoscopy unit services
		Reduction in bowel cancer incidence	Quality of Life Years (QALYs) saved (estimated at s 9(2)(f)(iv) over the 20-year modelled period)
Disbenefit	Anxiety arising from participation in the NBSP for some participants	Widening of equity gap for Māori bowel cancer mortality, incidence and survival rates	Colonoscopy interval cancers
	Adverse physical health outcomes from the screening process for some participants		

* Not specified in the benefits profiles.

For further information refer to:

- Appendix A: Benefit maps, showing how the benefits link to the strategic objectives
- The Benefit profiles located in National Bowel Screening Programme: Benefits Profiles version 1.0 (20 August 2018)
- Appendix C: Appendix C: Benefits for evaluation, summarising benefits that may be subject to future evaluation
- Appendix D: Benefits and disbenefits that will not be measured, identifying 12 benefits that will not be measured.

Summary of measures

Each benefit has at least one measure that will be tracked and monitored.

Table 2: Summary of the measures for each benefit

ID	Benefit name	Measure(s)
B01	Maximise detection of bowel cancers, within the programme parameters	Cancer detection rate: the number of bowel cancers detected per 1,000 people offered screening. Positive Predictive Value (PPV) of FIT for bowel cancer: the percentage of people with bowel cancers detected by colonoscopy.
B02	Increase in the proportion of bowel cancers detected at TNM Stages I and II	The TNM stage data for bowel cancer is currently not captured consistently in the New Zealand Cancer Registry. Over time, the proportion of bowel cancers diagnosed at Stages I and II will increase but this is not expected to occur until after each DHB has completed its roll out. This benefit is somewhat measureable, but it has limitations due to data quality. It is possible to measure proportions at different TNM stages, although only approximately 60 percent of the bowel cancers in the New Zealand Cancer Registry are recorded at the TNM stage.
B03	Appropriate rate of screen detected advanced adenomas	Positive Predictive Value (PPV) of FIT for advanced adenomas: the percentage of people with any advanced adenomas detected by colonoscopy.
B04	Reduction in bowel cancer mortality	Bowel cancer mortality rate: the number of deaths in New Zealand due to cancer of the colon, recto sigmoid junction and the rectum, scaled to the size of the population per unit of time, and age-standardised to the World Health Organization (WHO) world standard population.
B05	Reduction in bowel cancer incidence	Age-standardised bowel cancer registration rate: the number of cancers registered in New Zealand, found in the colon, recto sigmoid junction and rectum, scaled to the size of the population, per unit of time, and age-standardised to the WHO world standard population.
B06	Increase in five-year relative survival rate for bowel cancer	Five-year relative survival rate: the percentage of people whose survival is at least five years following diagnosis with bowel cancer.
B07	Benchmarking bowel cancer mortality rate improvements with international comparisons (smaller variance from OECD average)	Mortality rates are based on numbers of deaths registered in a country in a year, divided by the size of the corresponding population. Note: this value often includes anal cancers, and is standardised to the WHO world standard population.

Key dependencies regularly measured by programme monitoring indicators

Participation rate in the programme

This is the percentage of people invited to the programme who have a final FIT result (positive or negative). If participation is lower than expected (60 percent in the first screening round), then the benefits will be lower than expected. Conversely, if participation is higher than expected, then the benefits may exceed expectations (see indicator 200).

The percentage of participants with a positive FIT proceeding to colonoscopy

The percentage of screened people with a positive FIT result who have had a colonoscopy or CT colonography through the programme, or have a date booked for a colonoscopy, should be at least 90 percent. The positivity level of the FIT is the percentage of people with a positive FIT during the first and subsequent rounds of screening. If the positivity level is lower than expected (less than five percent in Round 1), benefits could be lower than expected. Conversely, a higher level of positivity may produce higher benefits (see indicator 204).

Quality of service delivery

The quality of service delivery is impacted by bowel preparation before colonoscopy and the quality of the colonoscopy procedure. These are measured by caecal intubation rates, with a target of 95 percent, and percentage of people with adequate bowel preparation (both indicators are under development). If the quality of service delivery is lower than expected, the benefits will be lower than expected.

Table 3: Summary of the measures for each disbenefit

ID	Disbenefit name	Measure(s)
D01	Anxiety arising from participation in the NBSP for some participants	**Colonoscopy wait time** Wait times for the colonoscopy procedure are within agreed timelines as long wait times may cause anxiety. **Negative FIT interval bowel cancers** The FIT is a screening test – not a diagnostic test. Some participants may be anxious that lesions may be missed. **Percentage of colonoscopies with no abnormalities found** The colonoscopy procedure itself may cause anxiety if no abnormalities were found during the procedure, where no biopsies were taken and where the results are accurate, would have been subjected to unnecessary colonoscopy.
D02	Adverse physical health outcomes from the screening process for some participants	**Post-polypectomy perforations** The proportion of colonoscopies that included at least one polypectomy, where there was a perforation requiring hospital admission, within 30 days of the colonoscopy being performed. **Post-polypectomy bleeds** The proportion of colonoscopies that included at least one polypectomy where there was a bleed requiring hospital admission, within 30 days of the colonoscopy being performed.
D03	Widening of equity gap for Māori bowel cancer mortality and survival rates	**Participation rates for the programme** We will collect data about the number of people successfully undertaking the FIT and analyse a breakdown of the participating population to determine if this disbenefit is being managed. **Uptake rates for colonoscopy** We will collect data about the number of people who have a positive FIT and who have a colonoscopy and analyse a breakdown of the participating population to determine if this disbenefit is being managed.

Reviews

IMAP mandatory operational and benefits realisation review

This review confirms that the benefits set out in the business case are being achieved and the business changes (operational assets and/or services) are operating smoothly. It will be held six–12 months after handover to the new operation owner of the NBSP, with a final review just before the end of a service contract. The assurance provider will be either The Treasury or an external Independent Quality Assurance (IQA) provider and the report back will be to Cabinet.

Assumptions and constraints

The assumptions and anticipated constraints about managing outputs and responsibilities for benefit realisation are outlined below.

Assumptions

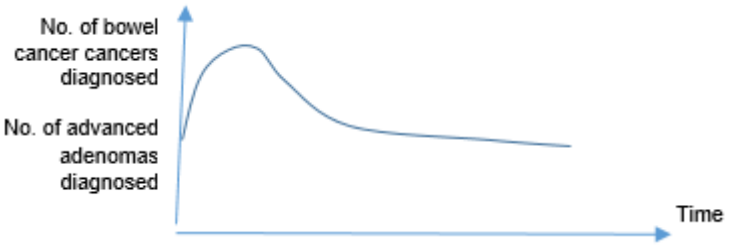
- That the national bowel screening programme is offered to all of the eligible population with an assumed appropriate participation of 60 percent in the first round.
- For the purposes of assessing the potential cost savings, modelling will be based on the research results carried out by the Sapere Research Group in July 2016.[1] The treatment costs derived from this research will be multiplied by the number of participants diagnosed with bowel cancer in the different TNM stages during NBSP implementation. It is assumed that any trends shown as a result of this analysis will indicate an overall decrease in bowel cancer treatment costs. It is also assumed that the costs will remain constant for the duration of the modelling period.
- When assessing the long-term data for bowel cancer mortality, bowel cancer incidence and bowel cancer survival, a general assumption exists that the long-term results are directly attributable to the introduction of bowel screening. This is potentially incorrect as other factors may influence results in these areas over the timeframe. We recommend that results are analysed with caution – changes in cancer mortality, incidence and survival may not be directly attributable to the introduction of bowel screening and may be masked by developments in treatment and changes in co-morbidity rates in the population, for example.
- For the purposes of reporting, it has been assumed that the reporting on the benefits and disbenefits for those classified as the "screened population" will be required for 10 years from the commencement of screening at each DHB, with the full evaluation occurring around 2031.

[1] Final report: The cost effectiveness of bowel cancer screening in New Zealand: a cost-utility analysis based on pilot results. Sapere Research Group, July 2016.

Constraints

A baseline and target cannot be set for all benefits classified as "screened population" as data may be not be collected or reliable. Instead, we will monitor an expected trend. We expect that there will be an initial increase in the number of bowel cancers registered in the New Zealand Cancer Registry (ie, bowel cancer incidence) as each DHB joins the NBSP and cancers are found via screening before becoming symptomatic (see Figure 1). We expect that these will fall and then plateau over time. The number of adenomas found via screening may also show similar trends. We will monitor the presence and scale of the initial increase.

Figure 1: Cancer diagnosis curve



Risks and issues

If any of the programme risks become issues, there will be an impact on the benefits realisation, eg, if DHBs are late to roll out the screening programme, if the supply of FITs is delayed or demand exceeds supply, or if the workforce numbers/skill sets are lower than needed. All these will delay or lead to lower levels of benefit realisation. The risks are all documented in the NBSP Risk Register, which is unpublished. The four key risks that will directly impact on the programme's ability to deliver the benefits are summarised in Table 4.

Table 4: Risks impacting on benefit realisation as at 1 September 2018

Risk	Trigger	Benefits impact	Inherent risk rating	Residual risk rating	Risk treatment/mitigation plan
There is a risk that Māori, Pacific peoples, high deprivation and/or other populations have lower participation rates than the general population, which may result in the NBSP not achieving equity.	Varying participation rates along the pathway noted	1	Significant	Moderate	The stepped roll-out of NBSP will help mitigate this risk as it allows District Health Board (DHBs) to revise the process for implementation across each DHB and meet their specific population needs. Equity is being closely monitored in the eight DHBs providing bowel screening currently. Local solutions are being developed with the assistance of Māori and Pacific networks. The National Coordination Centre Service Delivery Model (NCC SDM) includes active follow up for priority groups. Establishing the NBSP in DHB regions requires equity plans. Bowel screening regional centres (BSRC) are required to have an equity lead and produce a regional equity plan. There is funding in service delivery contracts for outreach following NCC active follow-up, as well as Maori and Pacific networks funded through BSRC contracts. This is to encourage Māori and Pacific uptake in the NBSP. Key monitoring reports include ethnicity to enable analysis of take up by different ethnic groups.
There is a risk that DHBs and Screening Service providers will not be able to provide the contracted services in the agreed timeframes because of insufficient workforce skill capacity eg, Colonoscopy, Pathology, Endoscopy, Nursing, Radiology. This may result in increased waiting times, performance indicators not being met and increased potential for psychological harm for participants.	Insufficient staff available to provide screening services	2	Significant	Significant	Current colonoscopy wait time indicators suggest that DHBs are under pressure to maintain current levels of service. Work with Health Workforce New Zealand (HWNZ) to provide, initiatives to increase number of gastroenterologists and surgeons. HWNZ has training underway to upskill nurses allowing them to perform endoscopy procedures. DHBs are required to provide production plans to ensure they have a plan to meet increased demand going forward. Communications around wait time indicators and any change in delivery capacity is to be regular and managed by the Ministry with DHBs.

Risk	Trigger	Benefits impact	Inherent risk rating	Residual risk rating	Risk treatment/mitigation plan
If NBSP participation rates are lower than expected, there is a risk that the programme will not deliver screening to the eligible population.	Participation rates are below minimum agreed percentage of eligible population	1	Significant	Moderate	Lessons learnt from pilot. Ensure GP involvement in recruiting. DHBs are expected to have a high level of engagement with primary health organisations (PHOs) and general practices. Stakeholder Engagement Strategy to be included in Communications/Media planning and delivery.
If the BSP+ bowel screening register does not contain accurate information on all eligible participants, there is a risk that the eligible population may not be invited to be screened, which may result in participants who weren't invited developing cancers.	Participant invitations are below expected numbers	1	Severe	Severe	Robust invitation strategy has been implemented, however, we are unlikely to identify 100% of the eligible population. Ensure NHI has current address and phone information. Investigate links with Department of Internal Affairs (DIA) deaths database for faster register updates.
If the BSP+ application software and/or technology fails and cannot be recovered, there is a risk that the NBSP will be unable to manage participants, invite new people and provide data on participants.	BSP+ application software failure	1	Severe	Severe	The long term solution is to replace BSP+ with the new National Screening Solution system. 11/05/2018: project brief on BSP+ Remediation Project (Infrastructure as a Service (IaaS) and Software remediation) endorsed by Leaders Group. Project initiation underway. Project brief on platform remediation is in draft.

Dependencies

The target benefits are dependent on:

- the level of participation in the screening programme. If participation is lower than expected (60 percent in the first screening round, for the total population), then the benefits will be lower than expected. Conversely, if participation is higher than expected, then benefits may exceed expectations
- the coverage of the screening programme. If too few potentially eligible people are invited, then the benefits will be lower than expected
- the positivity level of the FIT. If the positivity level is lower than expected (less than 5 percent in Round 1), benefits could be lower than expected. Conversely a higher level of positivity may produce higher benefits
- the percentage of participants with a positive FIT proceeding to colonoscopy
- the percentage of screened people with a positive FIT result who have had a colonoscopy or CT colonography through the programme being at least 90 percent
- the NBSP embedding the actions identified in each Benefit Profile into the programme design and outputs to enable benefit realisation as an integral part of programme delivery
- the measures introduced to promote bowel screening ensuring that the various population groups participate equally
- GPs fulfilling their role as agreed and the NCC completing their tasks as outlined in their process documentation to meet the timelines for returning FIT results
- a high standard of health literacy among the pre-assessment and colonoscopy staff to manage and minimise patient harm
- the quality of the bowel preparation before colonoscopy and the quality of the colonoscopy procedure to measure results for Benefits B01, B02, and B03.

Post closure monitoring of benefits

Once the programme has been implemented in 2021, and moved to business as usual, all monitoring of benefits realisation and managing of disbenefit mitigation will be carried out by the National Screening Unit's Screening Insights and Analytics team.

Roles and responsibilities

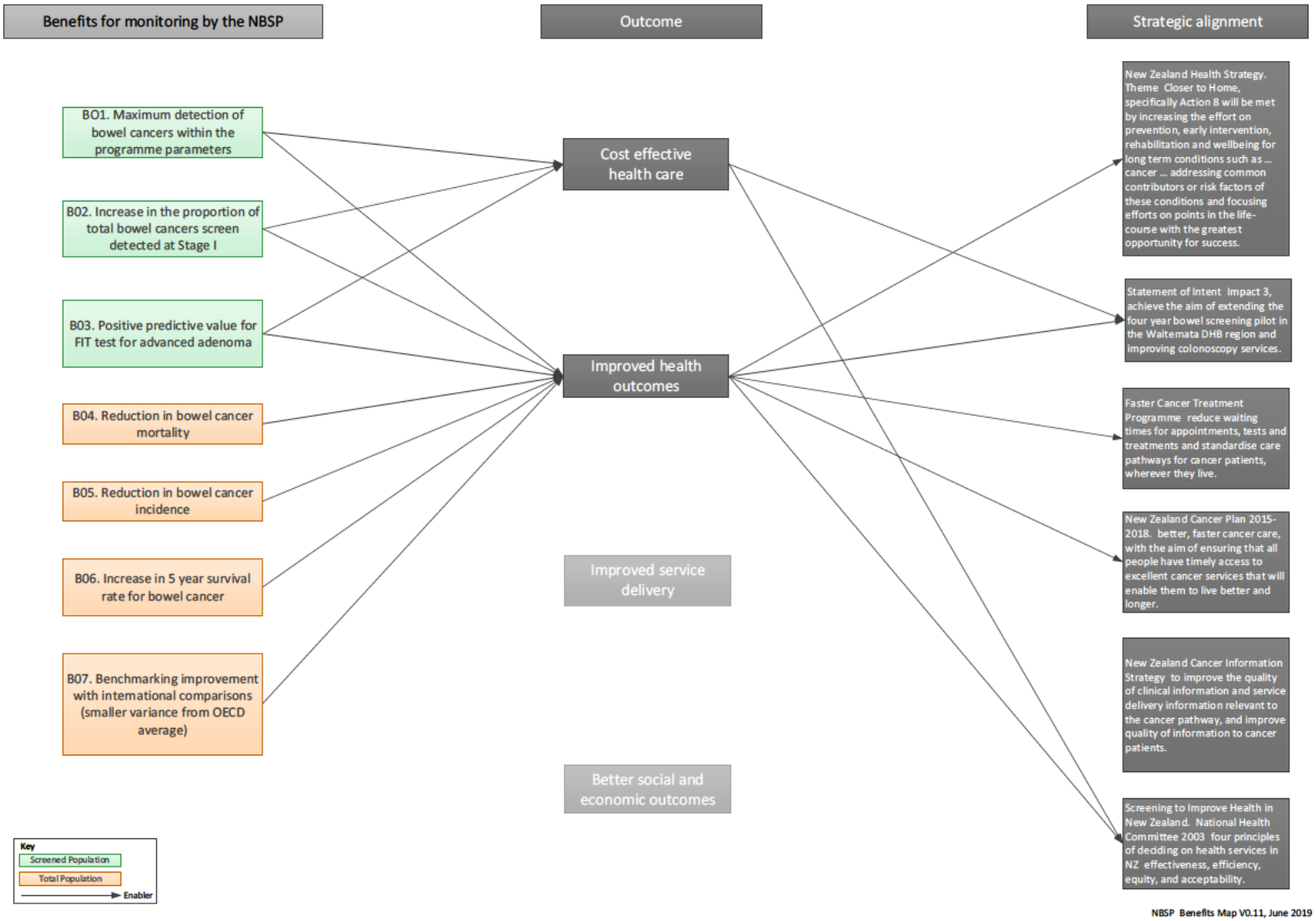
Benefits management roles and responsibilities are outlined in Table 5 as per the benefits management strategy.

Table 5: Benefits management, roles and responsibilities

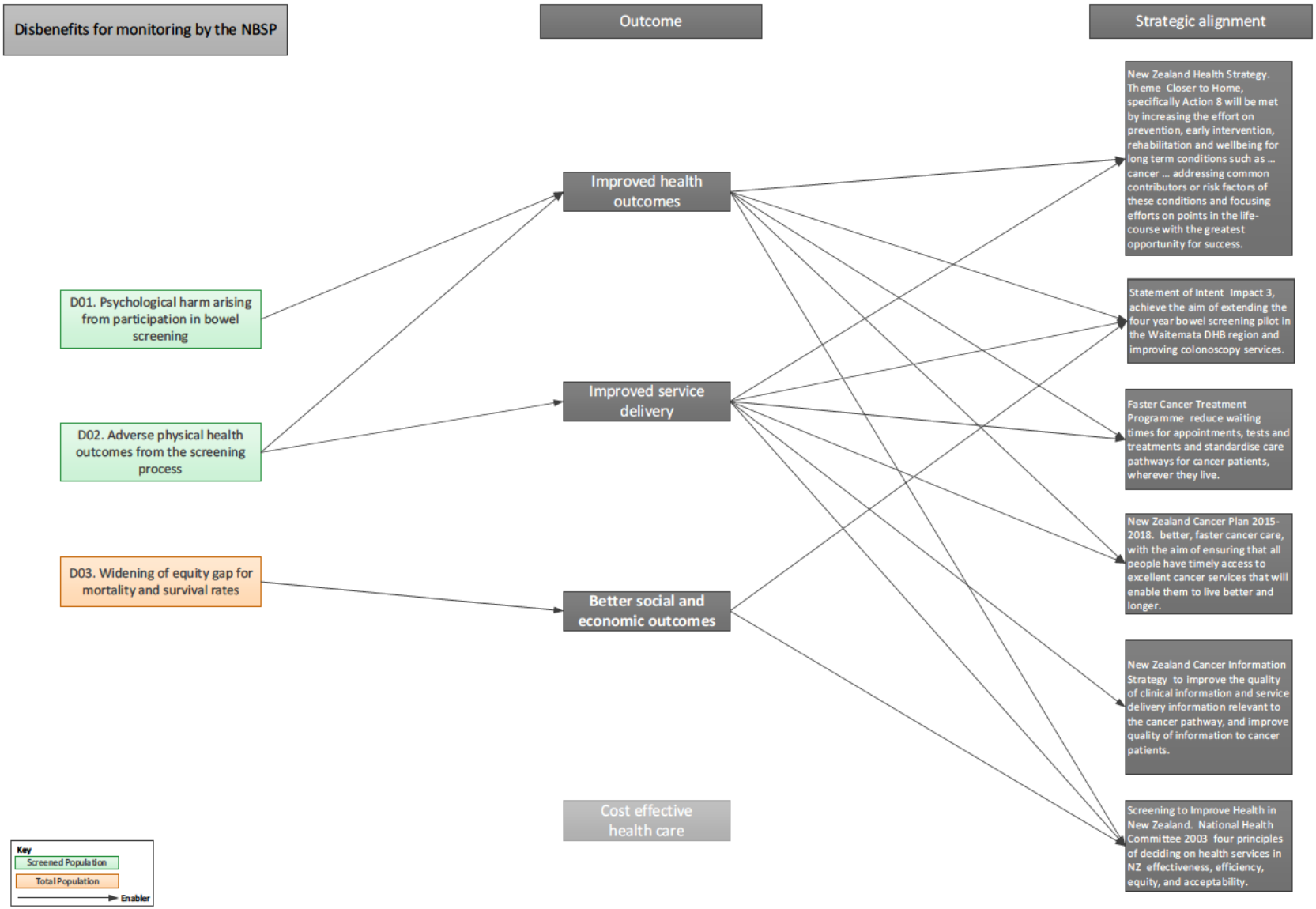
Role	Responsibility
Senior Responsible Officer	Accountable for ensuring the programme realises planned benefits Embeds the capability into the business operations Ensures business ownership, understanding, commitment and adoption
Programme Director and Clinical Director (Benefits Owners)	Responsible for the setup, delivery and management of the NBSP Responsible for benefits management from identification to realisation Agrees the benefit profile Agrees the benefits realisation plan and benefits management strategy Monitors the delivery of the benefits Responsible for recommending business changes to maximise benefits and minimise disbenefits based on monitoring information and evidence
Programme Manager	Responsible for developing the benefits realisation plan in consultation with the benefits stakeholders Responsible for maintaining the benefits realisation plan during the programme life Ensures benefits realisation is adequately planned for following hand over to the benefits owner at programme completion Drives the progress of the benefits realisation during the initiative life Ensures benefits realisation is adequately planned for following hand over to the benefits owner at project completion Reviews and facilitates agreement of benefits profiles and benefits realisation plans Ensures alignment of benefits to the business case
Measure Owner	Collects and reports data to evidence benefits realisation Supports other benefits roles with benefits subject matter expertise Monitors and tracks the measures identified for each benefit and disbenefit Reports on findings of analysis to Programme Manager
NBSP Governance Group	Ensures effective and appropriate systems are in place for delivery and realisation of benefits Authorises the business case and benefits realisation plan and any subsequent changes

Appendix A: Benefit maps

Benefits map



Disbenefits map



Appendix B: Reference documents

Link	Date	Author	Title
Notes Link	19/08/2016	Demelza Halley	Final Business Case Documents
Notes Link	17/10/2016	Isobelle Gosling	NBSP Programme TRACKING LOGS: Decision, lessons, milestones, status dashboard, programme change log
Notes Link	01/11/2016	Isobelle Gosling	NBSP Programme Assurance-Plan
Notes Link	04/11/2016	Deborah Donkin	BenefitsMap(Visio)
Notes Link	08/11/2016	Isobelle Gosling	NBSP RISK & ISSUES REGISTER | DHB Risk & Issues Template | Risk & Issues Flow Charts
Notes Link	08/11/2016	Deborah Donkin	BenefitsManagmentStrategyVersioned
Notes Link	10/11/2016	Isobelle Gosling	NBSP Programme Initiation Document (PID) Versioned
Notes Link	30/11/2016	Deborah Donkin	BenefitsSummary(Excel)Versioned
Notes Link	30/11/2016	Deborah Donkin	BenefitsSchedule(Visio)
Notes Link	30/11/2016	Isobelle Gosling	NBSP Programme Tools: Change Template, WBS, Dependency Map, Timeline – Gantt, Glossary, Project Artefacts

Appendix C: Benefits for evaluation

There are additional benefits from the proposed investment in the NBSP that cannot be easily measured but support the case for investment and could be evaluated. These have been classified as "For Evaluation" and will not be monitored during the implementation period by the NBSP. These benefits can be defined as indirect indicators to the success and worthiness of the NBSP, and cannot be regularly monitored due to numerous variables.

The benefits for evaluation are:

- reduction in total actual bowel cancer treatment costs
- Quality of Life Years (QALYs) saved
- contribution to society
- quality improvement to DHB endoscopy unit services.

Note: The reduction in total actual bowel cancer treatment costs differs from Measure 2: *Indicative decrease in bowel cancer treatment costs*, for Benefit B02: *Increase in the proportion of screen detected bowel cancers detected at TNM Stages I and II* (based on modelling and assumptions).

Reduction in total actual bowel cancer treatment costs

The expected financial benefits are:

- a reduction in the lifetime costs of treating bowel cancer
- a reduction in subsequent treatment needed due to cancers diagnosed at an earlier stage
- the removal of pre-cancerous lesions before they develop into bowel cancer.

Screening has been shown, both internationally and in New Zealand, to detect cancers at an earlier, more treatable, and less costly to treat, stage. Of the cancers diagnosed through the Bowel Screening Pilot, 65–70 percent were Stage I or II, compared with approximately 40 percent of all bowel cancers diagnosed in New Zealand through symptomatic services.[2] When cancer is diagnosed at an earlier stage, there are lower treatment costs compared to the cost of treating more advanced cancer. One in 10 of all cancers found during the pilot were identified at such an early stage that they required no further surgery, chemotherapy or radiotherapy post colonoscopy.[3]

[2] The PIPER Project Final report 7 August 2015, Health Research Council reference: 11/764.

[3] Mike Hulme-Moir, Clinical Director Bowel Screening Pilot.

Table *6* shows the variance in average treatment costs between different stages of bowel cancer (based on Irish data, and the results of the Bowel Screening Pilot in Waitematā).

Table 6: Costs of treatment for bowel cancer stages I-IV[4]

Stage	Lifetime excess healthcare costs from bowel cancer per person, aged 60–79 (NZ$)[5]	Cost of treating cancer (unweighted average by stage)[6] (NZ$)
I	42,740	44,849
II	70,745	68,917
III	93,341	86,759
IV	59,339	54,054

Benefits measurement

There are some challenges in collecting the required cost information to calculate actual treatment costs as part of ongoing reliable monitoring. These include:

- Currently real data about to the cost of bowel cancer treatment is not collected, and there is no national standard outlining how each of the 20 DHBs account for the costs of treating bowel cancer. The results of the pilot are unique to Waitematā DHB and the PIPER study is unlikely to be repeated. Therefore, the baseline for measuring treatment costs outlined in the business case was based on outcomes from the bowel screening pilot in Waitematā DHB and evidence from other international screening programmes.
- Over the 10 plus years that the realisation of this benefit will need to be monitored, there is a possibility that variables will change, eg, technology may improve or change, treatment delivery may be different, or population health may change. Therefore, it is invalid to compare future state lifetime costs to any baseline established at the time of the bowel screening roll out.

In addition, it is not possible to accurately assess the true percentage of cancers diagnosed at each stage within the total population. Approximately 40 percent of all colorectal cancers in the New Zealand Cancer Registry are not attributed with a stage or an extent of disease. We hope this will change in the future.

[4] Draft Report: The cost effectiveness of bowel cancer screening in New Zealand: a cost-utility analysis based on pilot results.

[5] The values used in the CBAx analysis are lower than the values shown, based on Irish data. Sapere Research Group, 23 May 2016.

[6] Final: The cost effectiveness of bowel cancer screening in New Zealand: a cost-utility analysis based on pilot results. Sapere Research Group, July 2016.

We recommend that the following benefits be used as a proxy measure of the financial gains associated with introducing bowel screening to New Zealand:

- B01. Increase in the proportion of screen detected bowel cancers detected at TNM Stages I and II
- B02. Appropriate rate of screen detected advanced adenomas.

Quality of Life Years (QALYs) saved

Data from the Bowel Screening Pilot's final evaluation report includes detailed cost effectiveness information. The report found that, if bowel screening was rolled out nationally using the BSP parameters, there would be a QALY gain of 0.0747 (27 days) per person. Recent analyses have shown that the QALY gain for a programme using an age-range of 60–74 and a positivity threshold of 200 ngHb/ml buffer would result in a QALY gain of 0.0607 (22 days) per person invited. The net present value of the benefit is modelled at s 9(2)(f)(iv) over the 20-year modelled period.

Contribution to society

Screening is expected to realise significant social and economic benefits. We have estimated the value of these benefits and they were included in the economic evaluation section of the business case. As the estimated costs are indications of the wider social and economic benefits, and cannot be validated to a high degree of certainty, they were excluded from the financial analysis in the business case and will also be excluded from the benefits realisation plan.

It is expected that those aged over 60 are more likely to be retained in the workforce until retirement, if diagnosed with bowel cancer early. Reduced morbidity and mortality rates would contribute to lower social costs, fewer work hours lost and the opportunity for greater whānau and community contribution. People aged 60–74 currently work, pay taxes, and contribute to society. Around 35 percent volunteer to support[7] their families as caregivers. This enables parents to work (reducing benefits) or providing home support while younger adults work. Children who are well-supported are more likely to attend school, learn and develop in line with their peers, and participate in social activities. The benefits relating to contribution to society have been estimated at 30 percent of the value of a statistical life, divided by the life expectancy. The cost evaluation analysis undertaken to support the business case estimated the contribution to society at s 9(2)(f)(iv) over the 20-year modelled period.

[7] Department of Internal Affairs Volunteering and Donating Indicator, September 2014.

Quality improvement to DHB endoscopy unit services

The required quality standards associated with population screening have a direct follow on to improvements in symptomatic services. Hawkes Bay DHB are contracted to apply the New Zealand version of the Global Rating Scale (NZGRS) via the National Endoscopy Quality Improvement Programme (NEQIP). The NZGRS is a web based set of standards that enables endoscopy units to assess how well they provide a patient-centred service. The Northern Cancer Network will host the Endoscopy Guidance Group of New Zealand (EGGNZ) to establish an approach for the accreditation of endoscopy units and identify potential areas of improvement.

Appendix D: Benefits and disbenefits that will not be measured

Benefits

Improved relationship/engagement with primary care

Having primary care as an active partner in the bowel screening programme facilitates improved integration and relationships across the health system, with potential for flow-on effects for other health issues for participants. Information from the NBSP would be readily available to the GP and enable the participant and GP to discuss other health issues.

Raised awareness of bowel cancer

Results from the Waitematā DHB indicate that, over the initial two years of the pilot, bowel screening raised awareness of the symptoms of bowel cancer, resulting in an approximately 20 percent increase in referrals for diagnostic colonoscopy to investigate bowel symptoms. The 'bystander effect' raising population awareness of bowel cancer and symptoms and disease prevention is a significant benefit. 'Health literacy' will be improved as people understand more about their health needs and options.

Increased identification of individuals and families with genetic bowel cancer syndromes

Highlighting and assessing the significance of family history of bowel cancer as part of the bowel screening pathway has the potential to identify families with a genetic predisposition to developing bowel cancer. In the Netherlands, approximately 16 percent of participants presenting for colonoscopy as part of the bowel screening programme had a family history of bowel cancer and approximately six percent were referred for genetic assessment. Offering these families regular colonoscopies has the potential to substantially further increase the bowel cancer incidence and mortality benefit from bowel screening. The current Familial Gastrointestinal Service has provided an estimated cost benefit of $11 million annually in saved hospital costs.

Wider health benefits

In addition to the direct health benefit to the individual, there is a wider health benefit to the system and other cancer patients as a result of detecting and treating, earlier stage bowel cancers. Where no further surgery, chemotherapy or radiotherapy is required post colonoscopy, this frees up constrained resource for other cancer patients and assists the achievement of the faster cancer waiting times for all patients. Earlier diagnosis and reduced mortality would also reduce pressure on hospice and palliative care services.

Using high quality data

The programme will collect relevant, high quality data. This data will be available to a wide group of stakeholders including the wider health sector. This will ensure the programme can provide:

- high quality clinical information relevant to the bowel cancer pathway
- high quality service delivery information relevant to the bowel cancer pathway
- high quality information to bowel cancer patients
- data which can be used for evaluation, monitoring, and research purposes.

Providing complete and accurate data is a requirement of the national IT solution and is not measured separately. While the value of the data generated could potentially be assessed by measuring the relevance of the data to service delivery, clinicians, patients, and DHBs, it is not considered practical to do so.

Reducing bowel cancers identified through Emergency Department admissions

A national screening programme should decrease the proportion of bowel cancers that are first diagnosed through the Emergency Department (ED), which will reduce pressure on DHB ED services and reduce diagnostic and treatment costs. The 2008/2009 PIPER study identified that 34 percent of colon cancers and 14 percent of rectal cancers were first diagnosed through the ED. There are no plans to repeat a similar PIPER study, therefore, these values cannot be used as a baseline. Ten years following the start of a national programme offered to all the eligible population with appropriate participation, the proportion of all bowel cancers first diagnosed through ED may be lower than the 2008/2009 rates, for the total population and for Māori. The New Zealand Cancer Registry does not record where a cancer was diagnosed or mode of presentation but it could be derived from national collections (NMDS and NNPAC).

Disbenefits

DHB populations not receiving benefits due to staged rollout of NBSP

This disbenefit was identified and it is not easily quantified. The proposed phased rollout of the programme would result in people in some areas being offered screening later that those in other areas. Some cancers will be diagnosed later as a result of the rollout approach.

No known measures currently exist that could be used to quantify this benefit. The results won't be known until at least 10 years after the initial rollout of the screening programme to the first DHBs.

Programme parameters will result in some cancers not being identified

The constrained age range for the programme will result in people who are older not being screened, resulting in some cancers not being identified. Some people who are younger will have their cancer identified at a later stage than if screening had commenced at an earlier age.

The threshold for positivity on the FIT test will result in some cancers not being identified, which would have been detected with a lower threshold for positivity.

Opportunity cost

The cost of implementing the NSBP might preclude investment in other priority areas. This would be at both a national level and a local level, as DHBs may need to prioritise capex and/or opex to implement the programme in their area.

Increased endoscopy suite/theatre and consultant time allocated to screening programme activity would reduce capacity available for other patients/activities.

Increased pressure on resources

Endoscopy, histology, radiology and surgical capacity may be constrained. As the rollout progresses, the pressure on staff in these areas would increase until increased investment can improve workforce capacity.

Figure 2: Benefits that will not be measured

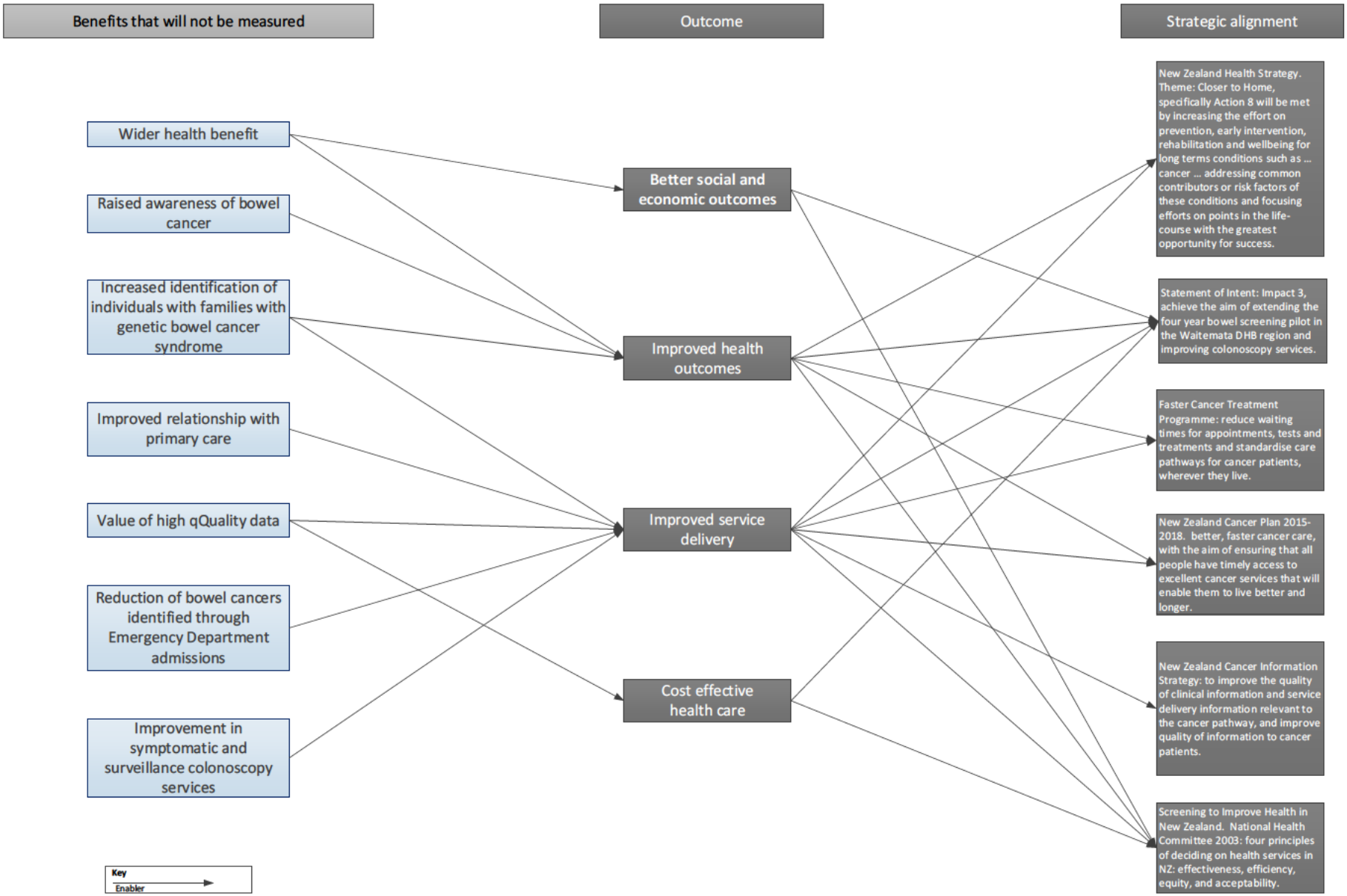
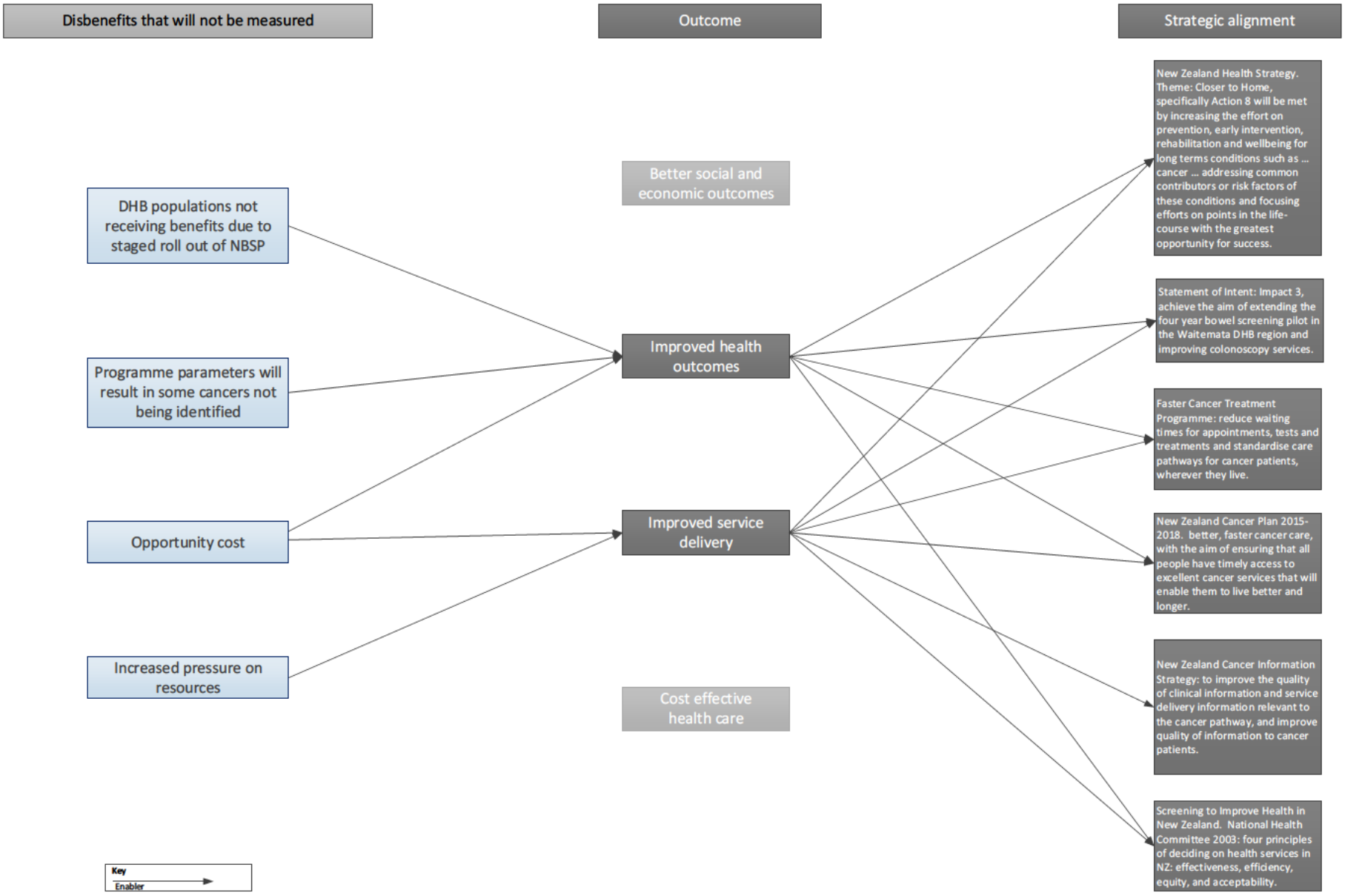


Figure 3: Disbenefits that will not be measured



Appendix E: Benefit review checklist

Question	Response
Relevance	
Are all the benefits/disbenefits still valid?	
Do all the benefits/disbenefits still require monitoring?	
Is the scale of benefits still sufficient given the investment made?	
Are the dependencies still relevant?	
Are the documented risks to benefit realisation still relevant?	
Emergent	
Have any new benefits/disbenefits emerged during the past year that need to be monitored and reported against?	
1Have any new dependencies emerged?	
Have any new risks and/or issues been identified?	
Realisation	
Have any benefits/disbenefits been performing at a rate *lower* than expected? If so: Why? Is this acceptable?	
Have any benefits/disbenefits been performing at a rate *higher* than expected? If so: Why? Is this acceptable?	
If actual benefits realisation/disbenefit mitigation is different to planned, does this require escalation?	
Baseline	
Do the benefit realisations forecasts need reviewing? Is a re-baseline exercise required? Which benefits will require updating?	
Roles	
Will the benefit owner remain the same person? Are any changes required? Are responsibilities being carried out as expected?	
Will the measure owners remain the same people? Are any changes required? Are responsibilities being carried out as expected?	
Reporting	
Are any changes required to the format, frequency, or content of the benefits reporting?	
Total population benefits/disbenefits	
Are the trends for bowel cancer mortality trending as expected? If not, can the variance be justified?	
Are the trends for bowel cancer incidence trending as expected? If not, can the variance be justified?	
Are the trends for five-year survival rate trending as expected? If not, can the variance be justified?	