Part 3

The Economic Case

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Appendix 3A

Option Appraisal

NORTH AYRSHIRE COMMUNITY HOSPITAL

SITE OPTION APPRAISAL PROGRESS REPORT

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NHS Ayrshire & Arran: NACH Option Appraisal Progress Report

1. Introduction

In recognition of the need to undertake a formal option appraisal related to identification of a preferred site for the proposed new Community Hospital in North Ayrshire, a non-financial option appraisal exercise was commenced during September 2009.

Unfortunately at the first two sessions arranged to conduct the appraisal process, legitimate concerns were raised that there was insufficient and inadequate representation to complete the process. Consequently it was agreed to simply review, as far as possible, the process to be followed and to identify as much information as possible that might support the process.

This was done very clearly in the understanding that the outputs from these sessions did not generate any "decisions" only information/an improved understanding of those issues that would inform the process.

This brief report is intended to present the information discussed thus far in advance of the formal appraisal meeting to stimulate further discussion/debate and ensure that everyone attending the appraisal meeting is as prepared as they can be. This information will all be presented at the formal appraisal session for review, discussion, challenge and amendment as appropriate.

2. Background

NHS Ayrshire and Arran have identified a requirement for a new Community Hospital to serve the population of North Ayrshire and have been developing a clinical brief and schedule of accommodation for this facility for some time. This facility will include in-patient mental health and older people's beds as well as outpatient and clinical support accommodation.

A significant portion of this facility is likely to relate to mental health services and in this context it is important to note that a detailed option appraisal around these areas has already been conducted. This identified the existing Ayrshire Central Hospital site as the clearly preferred option.

When this appraisal was carried out the full range of (non-mental health) services that would be included within the facility was not clear and consequently – whilst the Ayr Central site remains the preferred option for these – it is believed to be important to test this proposal in the context of the other services that will constitute North Ayrshire Community Hospital. (A working title for the facility only)

3. The Process Employed (Thus far)

The proposed option appraisal process has been discussed and agreed with participants thus far and is in line with relevant guidance on the matter. Essentially, it involves all contributors working through a series of questions that attempt to apply a consistent and rational approach to the challenge of identifying the best solution to the identified problems that the NACH is attempting to address (in the absence of financial considerations – which will be considered separately).These questions are:

- What are the issues that need to be addressed?
- What are the benefits criteria (measures) to be applied that identify how well each identified option addresses these issues?
- What is the relative weighting (importance) of each of these criteria?

- What is the actual weighting (importance) of each of these criteria?
- What are the options (potential solutions) available to be scored?
- How well do each of these options (potential solutions) realise the agreed benefits criteria?
- All things considered, what is the preferred option? (In the absence of further financial analysis/appraisal)

It must be emphasised that this option appraisal is purely non-financial at this stage and that a further financial analysis of the preferred options identified will be conducted as a component of business case development.

4. What Are The Issues/Concerns With Existing Facilities/Services That Need To Be Addressed?

Early brainstorming sessions have highlighted a range of concerns/issues related to current and proposed future facilities/services that will need to be optimally addressed through the solution determined at conclusion of the business case process. These included, in no particular order:

- A large portion of existing accommodation is “not fit for purpose”
- Some facilities are in a poor state of repair and new build must address this
- Patients are currently cared for in multi-bed areas (Single rooms now required)
- Services need facilities that are “fit for the future”
- All facilities need to be “future flexible”
- Areas available must support/act as a catalyst for service redesign
- New buildings must support local strategy regarding clinical service delivery
- The need to support/align to the Board’s property strategy
- A requirement to support integrated/partnership working
- Improved/optimum accessibility (local and demographic)
- The need for a more sustainable estate/service model
- Optimum revenue utilisation
- The need to increase clinical effectiveness
- The need to meet future capacity requirements
- A need to address security issues/concerns
- Must improve the patient experience overall
- A need to support future expansion/retraction/change
- A need to support site retraction/support further shifting the balance of care
- The need to take cognisance of the Board’s primary care strategy, mental health strategy, property strategy, workforce strategy, etc
- Consideration of national strategies
- The ability to support the recruitment and retention of staff
- Improved physical access/transport links
- Need to be close to the population being served
- Need for improved/equitable access
- Need to improve the utilisation of all available resources
- Desire to recognise “economies of scale”
- Need to absolutely minimise/negate “transitional costs”, e.g. The cost of de-cant
- Need to minimise “whole life costs”
- Need to optimise capital affordability
- Need to optimise build, delivery, lead times
- Requirement to minimise/negate disruption to patients and all services during construction

- Optimised programming/speed of delivery
- Need to tie in with Local Authority services
- Requirement to optimise capital planning
- Consideration of legal issues related to land/construction
- Similar consideration of planning issues
- Need for increasing service integration
- Drive to improve/rationalise patient journeys
- Security issues/concerns, e.g. lone working
- Isolation/Access issues/concerns
- The need to improve the working environment for everyone
- The need to achieve key targets, e.g. HEAT
- Staff governance concerns
- Corporate governance issues, e.g. EWTR, H&S, Security, etc

5. What Are The Benefits Criteria That Each Option Must Be Measured Against?

Following further extensive discussion/debate, the wide range of issues/concerns identified thus far were rationalised into 7 key headings that were believed to summarise the benefits criteria (measures) that each site option would be assessed against. In no particular order, these were identified as the extent to which each option:

- Is affordable

The extent to which each available site option affects capital and revenue affordability including; site costs; build costs; de-cant costs; staffing costs; transitional costs; economies of scale; whole life costs; travel costs; de-commissioning costs; demolition costs; land disposal/capital receipt issues; legal costs; programming implications; etc.

Affordability has thus far been identified as a key criteria for consideration within the overall evaluation process however, in so far as this is a "non-financial option appraisal", it will NOT be considered further as a component of this process. Rather it will feature within the wider business case.

- Improves accessibility

The extent to which each available site option is affected by; transport links; entrance/accessibility issues; population/demographic considerations; proximity to populations being served; access to key infrastructure; staff recruitment/retention issues; equitable access; etc.

- Provides/enables future flexibility

The extent to which each available site option is; able to expand/retract to meet future needs; supports future "change of use"; facilitates increasing service integration; is able to respond to changing demographics/shift in the balance of care; will be constrained by legal/planning issues.

- Minimises disruption to all patients/services affected

The extent to which each available site option; is safe during the construction phase; supports service continuity; minimises refurbishment; impacts on programme and phasing; affects patient experience; impacts upon transitional risks/experiences; affects the requirement for/impact of de-cant; ensures appropriate access during works; is acceptable to staff, patients and the wider community; impacts on reputation during construction; requires power "shut-

offs/cut-downs"; affects available capacity; impacts on contingency planning; is likely to affect delays/waiting time/other target issues; impacts upon security; impacts upon infection control issues/HAI SCRIBE (regulations for managing infection control in the built environment)

- Provides sustainability

The extent to which each available site option; affects the overall "carbon footprint" of the development; impacts upon the environment globally; delivers a facility that is also sustainable from a staffing perspective; is socially responsible; can be supported by an effective travel plan; affords scope for the use of renewable energy/technologies; supports the realisation of required environmental standards.

- Supports relevant local and national strategies

The extent to which each available site option; supports NHS A&A's Property/Estates/Clinical Strategy; supports/is aligned to relevant national strategies; supports the workforce strategy and HR policies; is aligned to the current Capital Plan; supports the local community plan; is aligned to the local development plan; etc.

- Is affected by planning/legal issues/considerations

The extent to which each available site option; will be impacted upon by public consultation; will be impacted upon by land disposal issues; will be impacted upon by the requirement to purchase; will be impacted upon by the local authority planning/approval process; requires road/infrastructure development; is influenced by more key stakeholders; is impacted upon by process/governance issues; is impacted upon by corporate governance issues; is affected by heritable rites/specific legal considerations; is affected by master-planning issues; is affected by "zoning".

6. What Is The Relative "Weighting" of The Identified Benefits Criteria?

To support the process of applying a relative "weighting" (priority) to each of the criteria identified a comparative matrix has been used to aid the initial relative prioritisation of benefits criteria. (Diag. 1, below)

Affordability (A)								
A	Accessibility (B)							
A	B	Future Flexibility (C)						
A	B	C	Decant/Phasing/Disruption (D)					
A	B	E	E	Sustainability (E)				
A	B	F	F	E	Planning/Legal Issues (F)			
A	B	C	G	G	G	Strategies (G)		
							(H)	
6	**5**	**2**	**0**	**3**	**2**	**3**		TOTALS

Diag. 1. Determining The "Relative Priority" Of Benefits Criteria

This "comparison matrix" forces participants to conclude which criteria are more important than others and in so doing helps to identify the approximate priority order of the identified benefits criteria. As such it can also be used as an aid to support the more complex process of applying an actual defined weighting to each to each criteria.

It is noted that this will be reviewed/challenged/amended as a result of the planned appraisal session and represents the culmination of work undertaken to date.

7. The Next Steps

The planned option appraisal workshop session will complete the option appraisal process through reviewing, challenging and appropriately amending those assumptions developed to date before:

Identifying the actual “weighting” (level of importance) to be attributed to each of the measurement criteria agreed

Hearing about – and being able to ask questions about – the site options available for consideration

Agreeing how well each of these options (potential solutions) realise the agreed benefits criteria by allocating each a score?

Agreeing, all things considered, what the overall preferred site option is (In the absence of further financial analysis/appraisal)

Appendix 3B

Mind your health Project Option Appraisal Report

Supporting Paper 4

Mind your health Project
Option Appraisal Report

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1 Introduction

NHS Ayrshire & Arran agreed in December 2006 to initiate a thorough strategic review of Mental Health Services in Ayrshire and Arran - Mind Your Health (MYH). The emphasis of MYH has been on removing artificial barriers between agencies; primary and secondary care; and individual services ensuring that people have access to a modern mental health service that meets their holistic needs and aspirations.

The Mind your health (MYH) Project was launched in December 2006. Since that time it has involved staff across NHS Ayrshire & Arran, partners in Local Authority and other services, representatives of voluntary organisations, service users and carers in the development of the model of care. This has been a comprehensive review of services for adults; older people; children and young people; as well as forensic; addiction and liaison specialist services.

The model of care was presented to a stakeholder conference in November 2007. This provided an opportunity to see the cross cutting connections within the model and to receive final feedback on the model. December 2007 saw the preparation of the Board Paper and the costing of the proposed model; these were presented to the Board on the 23 January who gave their full support of the proposals and agreed to a period of informing, engaging and consulting to improve the quality and range of mental health services in Ayrshire and Arran.

In addition a number of pressing issues within local services have been identified in terms of the need to respond to changes in legislation, care standards, clinical practice and workforce pressures. Moreover our population is changing rapidly in terms of its need for mental health services and we must respond positively and proactively to these requirements.

2 Option appraisal methodology

Option appraisal is a form of multi-criteria analysis. It is a well established, practical technique employed in the public sector to set objectives and create and review options, analysing their relative benefits and costs. The results from this analysis are then used to aid decision-making. It is particularly useful in addressing projects that have multiple and loosely defined objectives.

The option appraisal process comprises a number of specific stages that define objectives, identify options and measure costs and benefits.

Stage 1 – Defining the Problem

The first stage in the process is used to clearly outline the problem to be examined as well as the specific objectives that need to be addressed. These objectives are used to define the criteria upon which any assessment of alternative options is considered.

Stage 2 – Generating Options

This second stage involves the generation of potential ways of responding to the identified problem. In order to assess the potential costs and benefits of any change in care provision, a 'Status Quo' or 'do nothing' option is usually included, as recommended in UK Treasury Guidance[1]. All possible options are included at this stage.

Stage 3 – Shortlisting Options

To be able to assess a manageable list of alternatives, some of the original options are eliminated. Elimination can occur for a number of reasons, for example clearly excessive costs or the option may be unfeasible from the point of view of implementation. Options are eliminated only after full discussion within the group and agreement has been reached.

Stage 4 – Identifying, Measuring and Valuing Benefits

Benefits in an option appraisal are measured by the extent to which each option meets those objectives specified at the outset. This is achieved by defining a range of criteria for assessment. The criteria are then weighted to reflect their relative importance to one another. After defining and weighting the criteria, the group then reviews evidence relating to the criteria for each option. Individuals are then asked to assess each option against each criterion and give a score. The score for each criterion is multiplied by the weight that criterion has attached to it. The weighted score across all the criteria are then summed to provide a total weighted benefit score for each option.

[1] "The Green Book" Appraisal and Evaluation in Central Government. Treasury Guidance. London:TSO 2003

Stage 5 – Costings

Costs include both capital and revenue elements of necessary expenditure. Costs will be discounted as necessary according to UK Treasury guidelines.

Stage 6 – Dealing with Risk and Uncertainty

Any exercise of this nature requires that a number of assumptions are inherent in the analysis of the costs and benefits associated with each option. Key assumptions are varied to assess the degree of certainty surrounding the selection of a preferred option. Exploring the information in this way improves the robustness of any estimates presented and any subsequent decision analysis.

Stage 7 – Decision Analysis

Data on costs and benefits are then brought together and summarised using marginal analysis usually with respect to the Status Quo/doing nothing option.

3 Model development process

NHS Ayrshire and Arran initiated a strategic review of mental health services in November 2006. Designed to modernise and develop local mental health services, the MYH Project has the potential to radically improve the configuration and delivery of local services. In June 2007, the NHS Board supported the proposal to extend the Project to allow for more detailed planning to take place and to ensure that proposals for mental health services dovetail with the revised outcomes of the Review of Services Project.

To oversee the ongoing process around MYH, a Steering Group was established in July 2007 which reported regularly to the Mental Health Programme Board (MHPB). As a result of the outputs from the workshops in the first six months of MYH, a number of working groups were established around a range of remits as follows:

- Adult Mental Health Services;
- Older People's Mental Health Services;
- Specialist Services for People with Addictions;
- Child and Adolescent Mental Health Services (CAMHS);
- Performance and Information requirements;
- Promotion and Prevention;
- Intensive Rehabilitation;
- Specialist Liaison Services; and
- Specialist Forensic Services.

The Working Groups, Steering Group and Programme Board operated in parallel to the three reference groups (service users, carers and voluntary organisations) established at the start of the MYH Project.

The outputs from the working groups and the reference groups from August until October 2007 resulted in draft models of care that cumulated in an emerging model of care presented at a multi agency stakeholder event on 21 November 2007. This emerging model was further developed in light of the stakeholder event and was considered by the MHPB on 13 December 2007, where it was supported for onward submission to the NHS Board. To enhance mental health services MYH has identified a number of areas for development and service improvement. The recommendations define the strategic direction for mental health services in Ayrshire and Arran in the future.

There are significant resource implications to support the development of recommendations from MYH strategic model of care and using this strategic direction as a basis for service provision it was agreed that the future location of acute mental health inpatients services would be subject to an option appraisal process.

4 Criteria weighting events

Draft criteria definitions were circulated to each of the 4 groups[2] for consideration and comment in March 2008. These draft criteria definitions were reviewed and explored by participants in a series of meetings in April 2008. The first series of meetings provided an opportunity to gather feedback at an individual group level. The second series of meetings allowed the feedback from each group to be shared with the other groups and a consensus on the criteria and their definitions to be agreed.

In inviting participation at these events, and the subsequent scoring events, emphasis was placed on achieving the best possible process for engagement and involvement of stakeholders. In particular, care was taken to achieve an appropriate balance between service users, carers, voluntary organisations, NHS staff, partner organisations, and members of the public.

Each meeting was facilitated by Kirstin Dickson, Senior Health Economist to ensure consistency, fairness and clarity of understanding. Those present had the opportunity to ask questions throughout and seek clarity on the criteria definitions. Following agreement on the definitions, participants from each of the 4 groups were sent a criteria weighting pack which provided information on the final criteria and definitions, a criteria weighting grid and instructions about how to fill in the grid. In addition, participants were given the opportunity to call or email a member of the Project Team should they have any questions about the weighting process.

In total 49 people participated in the criteria weighting process. Out of the total number who participated, 10 people from the carers group weighted, 8 members from the voluntary organisations consortium weighted, 8 members of the Get it SUSsed group weighted and 23 from a fourth group weighted which included NHS managers and staff, representatives from partner organisations, the police and members of the public.

[2] The Carers Group, the Get it SUSsed Group, the Voluntary Organisation Consortium, and the Fourth Group (NHS, Partner Agencies & Public Representative Group).

5 Option specification

On 12 November 2007, the Mind your health Steering Group, along with lay representatives from the three Mind your health reference groups, met to commence the process of considering possible options for the future location of acute mental health inpatient services.

This first draft list of options was used as a starting point for discussion with the four groups involved in the option appraisal process. These groups are:

- Voluntary Organisation Consortium
- Carers Reference Group
- Get it SUSsed Group
- The Fourth Group (NHS, Partner Agencies & Public Representative Group)

Each group met throughout January, March, April and May to discuss the long list of options. Following discussion in these 4 groups the following long list of options was generated.

5.1 Long List of Options

Current Service (benchmark for other options)

1. Ailsa and Crosshouse (Status Quo);

Single Site Options

2. Refurbished Ailsa;
3. New build Ailsa;
4. Combined new build and refurbishment of Ailsa;
5. New build Ayrshire Central Hospital;
6. New build Kirklandside;

Two Site Options (main site, second site)

7. Refurbished Ailsa, new Build Ayrshire Central Hospital;
8. Refurbished Ailsa, new build Kirklandside;
9. New build Ailsa, new build Ayrshire Central;
10. New build Ailsa, new build Kirklandside;
11. Combined new build and refurbishment of Ailsa, new Build Ayrshire Central Hospital;
12. Combined new build and refurbishment of Ailsa, new build Kirklandside;
13. New build Kirklandside, new build Ayrshire Central;

Two Site Options (main site, second site – mirror image of options 7-13)

14. New Build Ayrshire Central Hospital, refurbished Ailsa;
15. New build Kirklandside, refurbished Ailsa;
16. New build Ayrshire Central, new build Ailsa;
17. New build Kirklandside, new build Ailsa;
18. New Build Ayrshire Central Hospital, combined new build and refurbishment of Ailsa;
19. New build Kirklandside, combined new build and refurbishment of Ailsa;
20. New build Ayrshire Central, new build Kirklandside;

Three Site Options (main site, second site & third site – Ailsa as main site)

21. Refurbished Ailsa, new Build Ayrshire Central Hospital & new build Kirklandside;
22. New build Ailsa, new build Ayrshire Central & new build Kirklandside;
23. Combined new build and refurbishment of Ailsa, new Build Ayrshire Central Hospital & new build Kirklandside;

Three Site Options (main site, second site & third site – ACH as main site)

24. New Build Ayrshire Central Hospital, refurbished Ailsa & new build Kirklandside;
25. New build Ayrshire Central, new build Ailsa, & new build Kirklandside;
26. New Build Ayrshire Central Hospital, combined new build and refurbishment of Ailsa & new build Kirklandside;

Three Site Options (main site, second site & third site – Kirklandside as main site)

27. New build Kirklandside, refurbished Ailsa & new Build Ayrshire Central Hospital;
28. New build Kirklandside, new build Ailsa & new build Ayrshire Central; and
29. New build Kirklandside, combined new build and refurbishment of Ailsa, new Build Ayrshire Central Hospital.

5.2 Short List of Options - Elimination Reasons

Once a long list of options has been generated, considering all of the possible options that are available to meet the objective of the option appraisal, that list is then assessed to determine which options are feasible. Options that are considered unfeasible are eliminated at this stage. The reasons for elimination of options are given below.

Options 6, 8, 10, 12, 15, 17, 19 & 21-29

These options include Kirklandside as single site or as part of two site or three site options. In discussion with all 4 groups, concerns were raised about the appropriateness of the site as a location for the delivery of acute mental health inpatient services. The following reasons for elimination were discussed:

- Accessibility by public transport for service users, visitors and staff;
- Although close to Kilmarnock, the proximity to a major road intersection and the lack of suitable pathways would impact on patients walking safely to local amenities;
- Remoteness from other NHS services and the likelihood of the site becoming stigmatised as the location of mental health services; and
- Remoteness from other NHS services and the resulting lack of integration with these services and the impact on services users.

Options 2, 7 & 14

These options include 'refurbishment of Ailsa' as a single site or as part of two site or three site options. All 4 groups commented on accessibility issues with the Ailsa site, recognising that access could be improved upon for service users, visitors and staff. In addition, discussion in the Fourth Group (NHS, Partner Agencies & Public Representative Group) focussed on the merits of the refurbishment of Ailsa as an option. The group agreed that the planning limitations of exclusive refurbishment of Ailsa without any new build would restrict the positive improvements to the service that could only come from delivering the service from a building that is fit for purpose where the functionality and design of the building will benefit those using the service and those delivering the service. There were also concerns that the capacity of the buildings would limit the ability to deliver single room (plus ensuite) accommodation.

Options 3, 9 & 16

These options included 'new build at Ailsa' as a single site or as part of a two site option. Following further discussion with the Facilities and Estates department it was confirmed that the feasibility of an entire new build facility on the Ailsa campus, was possible, but would be very difficult to provide without compromising service delivery. After discussion at all 4 groups it was agreed that this option would be removed on the basis that continuity of service delivery was more important.

5.3 Short List of Options

The remaining 5 options are shown below.

Status Quo Option

The Status Quo is included in the shortlist of options to provide a benchmark in order to compare the other options with the services that we currently provide. We currently deliver services for adults with mental health problems through primary care; community based secondary care and inpatient settings across Ayrshire and Arran.

Adult acute admissions are provided at Ailsa and Crosshouse Hospitals and old age acute admissions are provided at Ailsa and Ayrshire Central Hospitals. The Intensive Psychiatric Care Unit (IPCU), rehabilitation beds and continuing care beds are currently all based at Ailsa Hospital.

We also have continuing care beds for older people in three sites; East Ayrshire Community Hospital, Ailsa and a partnership provision at Cumbrae Lodge in North Ayrshire. However older people's continuing care services are not included in this review. They will continue to be provided at the existing locations, ensuring easy local access for patients, family and carers.

Option One - Combined new build and refurbishment of Ailsa

Option One provides a combination of new building, redecoration and renovation at Ailsa Hospital.

If we provide services from this single site, they would include:

- Adult acute admission and assessment unit with rehabilitation and continuing care provision;
- Older people's acute admission and assessment unit. A second older people's acute admission and assessment unit would be retained at Ayrshire Central;
- Intensive Psychiatric Care Unit and low secure facility;
- Addictions service; and
- Occupational Therapy and Physiotherapy would be available including facilities such as group rooms, kitchens, craft room, gym and equipment space.

Table 1: Current and future inpatient provision under Option One

Care Group	Function	Current bed provision	Projected new bed requirement	Location of services
Adult	Acute Admission / Assessment	92	88	Ailsa
Adult	Rehabilitation	12	10	Ailsa
Adult	Continuing Care	60	30	Ailsa
IPCU	Intensive Psychiatric Care Unit	7	8	Ailsa
Old Age	Acute Admission / Assessment	72	28 32	Ailsa Ayrshire Central
Addictions	Dual Diagnosis / Detox	12	14	Ailsa
Forensic*	Low Secure	0	10	Ailsa
Total		255	220	

* Low Secure Forensic patients are currently provided for in IPCU, bespoke care packages and privately commissioned care. There is not a designated low secure unit in Ayrshire and Arran at this time.

Option Two - New build Ayrshire Central Hospital

This option would see a newly built facility on the Ayrshire Central Hospital site in Irvine.

If we provide services from this single site, they would include:

- Adult acute admission and assessment unit with rehabilitation and continuing care provision;
- Older people's acute admission and assessment unit. A second older people's acute admission and assessment unit would be retained at Ailsa Hospital;
- Intensive Psychiatric Care Unit and low secure facility;
- Addictions service; and
- Occupational Therapy and Physiotherapy would be available including facilities such as group rooms, kitchens, craft room, gym and equipment space.

This option would involve a redesign of the new Community Hospital masterplan, with the mental health in-patient facilities provided in a separate new building specifically designed for the requirements of the mental health service. This new building would be integrated with the Community Hospital as a specialist wing with its own entrance, and share support services and associated facilities in the Community Hospital.

Table 2: Summary of current and future Inpatient provision in Option Two

Care Group	Function	Current bed provision	Projected new bed requirement	Location of services
Adult	Acute Admission / Assessment	92	88	Ayrshire Central
Adult	Rehabilitation	12	10	Ayrshire Central
Adult	Continuing Care	60	30	Ayrshire Central
IPCU	Intensive Psychiatric Care Unit	7	8	Ayrshire Central
Old Age	Acute Admission / Assessment	72	28 32	Ailsa Ayrshire Central
Addictions	Dual Diagnosis / Detox	12	14	Ayrshire Central
Forensic*	Low Secure	0	10	Ayrshire Central
Total		255	220	

* Low Secure Forensic patients are currently provided for in IPCU, bespoke care packages and privately commissioned care. There is not a designated low secure unit in Ayrshire and Arran at this time.

Option Three - Combined new build and refurbishment of Ailsa, new build Ayrshire Central

This option involves a combination of new building; re-decoration and renovation of existing buildings at Ailsa, with a smaller, newly built facility at Ayrshire Central Hospital. With a two site option some of the services will be delivered from both sites with other services being provided only from the main site. In this option the main site is Ailsa.

If we provide adult services from two sites, the following services would be available from both Ailsa and Ayrshire Central Hospitals:

- Acute admission and assessment for adults;
- Acute admission and assessment for older people; and
- Continuing care for adults.

The Ailsa site would have:

- Addiction services – Dual Diagnosis, inpatient detoxification;
- Rehabilitation services;
- Intensive Psychiatric Care Unit; and
- Low secure unit.

Table 3: Summary of current and future Inpatient provision in Option Three

Care Group	Function	Current bed provision	Projected new bed requirement	Location of services
Adult	Acute Admission / Assessment	92	44 44	Ailsa Ayrshire Central
Adult	Rehabilitation	12	10	Ailsa
Adult	Continuing Care	60	15 15	Ailsa Ayrshire Central
IPCU	Intensive Psychiatric Care Unit	7	8	Ailsa
Old Age	Acute Admission / Assessment	72	28 32	Ailsa Ayrshire Central
Addictions	Dual Diagnosis / Detox	12	14	Ailsa
Forensic*	Low Secure	0	10	Ailsa
Total		255	220	

* Low Secure Forensic patients are currently provided for in IPCU, bespoke care packages and privately commissioned care. There is not a designated low secure unit in Ayrshire and Arran at this time.

Option Four - New build Ayrshire Central, combined new build and refurbishment of Ailsa

This option would see a newly built facility on the Ayrshire Central Hospital site with a combined new build, redecoration and renovation of existing buildings on the Ailsa site. With a two site option some of the services will be delivered from both sites with other services being provided only from the main site. In this option the main site is Ayrshire Central Hospital.

If we provide adult services from two sites, the following services would be available from both locations:

- Acute admission and assessment for adults;
- Acute admission and assessment for older people; and
- Continuing care for adults

The main site would have:

- Addiction services – Dual diagnosis, inpatient detoxification;
- Rehabilitation services;
- Intensive Psychiatric Care Unit; and
- Low secure unit.

Table 4: Summary of current and future Inpatient provision in Option Four

Care Group	Function	Current bed provision	Projected new bed requirement	Location of services
Adult	Acute Admission / Assessment	92	44 44	Ayrshire Central Ailsa
Adult	Rehabilitation	12	10	Ayrshire Central
Adult	Continuing Care	60	15 15	Ayrshire Central Ailsa
IPCU	Intensive Psychiatric Care Unit	7	8	Ayrshire Central
Old Age	Acute Admission / Assessment	72	28 32	Ailsa Ayrshire Central
Addictions	Dual Diagnosis / Detox	12	14	Ayrshire Central
Forensic*	Low Secure	0	10	Ayrshire Central
Total		255	220	

* Low Secure Forensic patients are currently provided for in IPCU, bespoke care packages and privately commissioned care. There is not a designated low secure unit in Ayrshire and Arran at this time.

6 Option scoring events

As with the weighting events, four scoring events were held, one for each group:

- Voluntary Organisation Consortium
- Carers Reference Group
- Get it SUSsed Group
- The Fourth Group (NHS, Partner Agencies & Public Representative Group)

These events were all day events held on 7, 8, 9 and 10 of October 2008, in Cunninghame House, Irvine.

To ensure participants had an opportunity to engage fully with the options and the gathered evidence in advance of the events, detailed Scoring Information Packs were produced. These packs included a description and evidence for each option and a summary of the feedback from the consultation period. The packs were dispatched to participants on 15 September 2008, with an open invitation to contact the project team to discuss or seek clarity on any aspect of their content. In addition to this, all participants were offered an opportunity to meet the Project Team on 30 September 2008 at the Park Hotel, Kilmarnock to discuss the Scoring Information Packs and the scoring events in more detail prior to carrying out the scoring.

Three of the scoring events were chaired by Rita Miller, Vice Chair of NHS Board and Chair of the Mental Health Programme Board, and one event was chaired by Carol Fisher, Assistant Director of Planning and Project Director, Mind your health. This ensured consistency, fairness and clarity of understanding. At each event stakeholders assessed each option in turn, starting with the Status Quo. A review of the criteria was presented by Elaine McClure and Geoff Coleman, Mind Your Health Project Managers. Support regarding how to complete the scoring grids was presented by Edward Clifton and Owen Moseley, Trainee Health Economists. Information provided in the Scoring and Information Pack concerning each option was summarised and presented to each group. Derek Barron, Associate Nurse Director and Linda Boyd, Healthcare Manager Mental Health Services presented the information to the Fourth Group and to the Carer group. Elaine McClure and Carol Fisher presented the information to the Get it SUSsed Group and Geoff Coleman and Carol Fisher presented to the Voluntary Organisations Group. Jim Crichton, Director of Mental Health Services and Tom Steele, Assistant Director of Facilities were also present at each of the events to discuss the evidence provided and to answer questions about the options.

Thereafter, stakeholders had an opportunity to ask questions, seek further clarity and express opinion prior to scoring the relative benefits of the model against each criterion on a scale of 0 - 10. Representatives from the Health Economics Team were available to provide technical advice and support throughout the events.

In total 42 people participated in the scoring process. The Fourth group included 24 people who completed the scoring exercise while 7 and 5 individuals provided scores for the Carers and Voluntary Organisations Groups respectively. Finally, 6 people completed the scoring process for the Get It SUSsed Group.

7 Identifying, measuring and valuing benefits

7.1 Criteria

These criteria were agreed by the four reference groups taking part in the option appraisal prior to the criteria being weighted.

Safe
Any option should provide a safe service for all, patients, carers, visitors and staff. Any clinical risks associated with the option should be assessed, managed and minimised so that the provision of the service should do no harm and aim to avoid preventable adverse events.

Appropriate
The option should identify an appropriate pathway of care, developed through a multi-agency approach where necessary, to provide care and treatment locally wherever possible. There should be continuity of care and/or treatment, regardless of the position on the pathway of care, designed to match the needs of the service users and their carers. The level of care should ensure that service users are treated equally where they are in equal need, promoting equity not increasing inequity.

Positive Environment
Care should be provided in an environment that will maximise benefit to the individuals to aid their health and well being. This includes the design and functionality of the building along with a wider consideration of the location of the service and the environment in which it is located. Recognition should be given to the therapeutic benefit of outside recreational facilities and natural space.

Enable Recruitment & Retention
The option should facilitate both retention and recruitment of high calibre staff both now and in the future. This should consider rotas, training and accreditation.

Sustainable
The option should be able to accommodate changes in patterns of care and the changing needs of the population over the longer term. It should enable optimal and efficient deployment of all types of resources including staff, facilities and equipment to meet the expansion or contraction of services in the future.

Integrated
The option should promote integration within the Mental Health service, with other NHS services and with partner agencies. This should improve access to physical health services for patients and enable better working relationships between staff groups.

Accessible
The option should facilitate provision of services, both specialised and routine, as close as possible to where services users are in need. Convenience of accessibility by public transport and the local road network for service users and their families and/or carers, staff and by emergency transport should be considered. Provision of adequate free parking should also be considered.

7.2 Weighting Criteria

As described above, the criteria were weighted by four reference groups. The results of the weighting for these four groups respectively are shown in Appendix One. The mean weights from the four groups were given an equal contribution to the weighting for the base case analysis shown in Table 5 below.

Table 5: Mean criteria weights for use in base case analysis

	Safe	Appropriate	Positive Environment	Enable Recruitment & Retention	Sustainable	Integrated	Accessible
Mean Weight	13	14	11	7	11	8	9

7.3 Benefits Scoring

The benefit attributed to an option is determined by assessing each option against each criterion and giving a score to reflect how well that option performs against that criterion. The members of the four reference groups took part in the scoring exercise. At each meeting, group members were asked to score the benefits of the options individually. For each option in turn, individuals were asked to give a score against each of the criteria.

The maximum score that could be attributed to each criterion in each option was 10 and therefore the maximum total score for each option, across the 7 criteria, was 70. The average crude scores given to the options are shown in Appendix Two. These are the scores prior to the application of the criteria weights described above.

In order to calculate the weighted benefit score (WBS) for each option, the respondents scores for each criteria were multiplied by the relevant criteria weight. These values were then aggregated across all respondents to calculate the WBS. This methodology ensures that each individual was given equal influence. The final weighted benefit scores attributed to the options are shown in Table 6.

Table 6: Weighted benefit scores for use in base case analysis

Option	Total WBS
Option Two New build Ayrshire Central Hospital	597
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	398
Option One Combined new build and refurbishment of Ailsa	381
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	370
Status Quo Ailsa, Crosshouse and Ayrshire Central	218

8 Costs

All options apart from the Status Quo require capital costs for building renovations or new build requirements and all options have associated revenue costs which, by definition, are recurring. Each option has an expected lifetime of 50 years and therefore each option can be discounted over the lifetime of the project. In the analysis the capital costs have been phased in over the first three years. In addition, refurbishment of the options will be undertaken across years 24, 25 and 26. Capital costs, revenue costs, and refurbishment costs used in the analysis are detailed in Appendix Three.

8.1 Discounting

Costs were calculated from an NHS perspective and discounted in line with U.K. Treasury Guidance. Discounting is a technique used to compare costs and benefits that occur in different time periods. It is based on the principle that, generally, people prefer to receive goods and services now rather than later. This is known as 'time preference'. The discount rate is used to convert all costs and benefits to 'present values', so that they can be compared. The current recommended discount rate is 3.5%.

In order to reflect increased uncertainty about the future, Treasury guidelines recommend the use of long term discount rates in proposals "where the appraisal depends materially upon the discounting effects in the long term". A discount rate of 3% is recommended for years 31 – 75[3]. Therefore net present values were calculated using a discount rate of 3.5% for years 0 - 30 and 3% for years 31 - 50.

[3] "The Green Book" Appraisal and Evaluation in Central Government. Treasury Guidance. London:TSO 2003 p98

The net present value of the costs associated with each option, over a 50 year time horizon, is shown in Table 7.

Table 7: Net present values for each option

Option	NPV
Option Two New build Ayrshire Central Hospital	£ 147,836,343.99
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	£ 144,285,844.84
Option One Combined new build and refurbishment of Ailsa	£ 141,844,146.02
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	£ 144,640,893.49
Status Quo Ailsa, Crosshouse and Ayrshire Central	£ 117,355,647.80

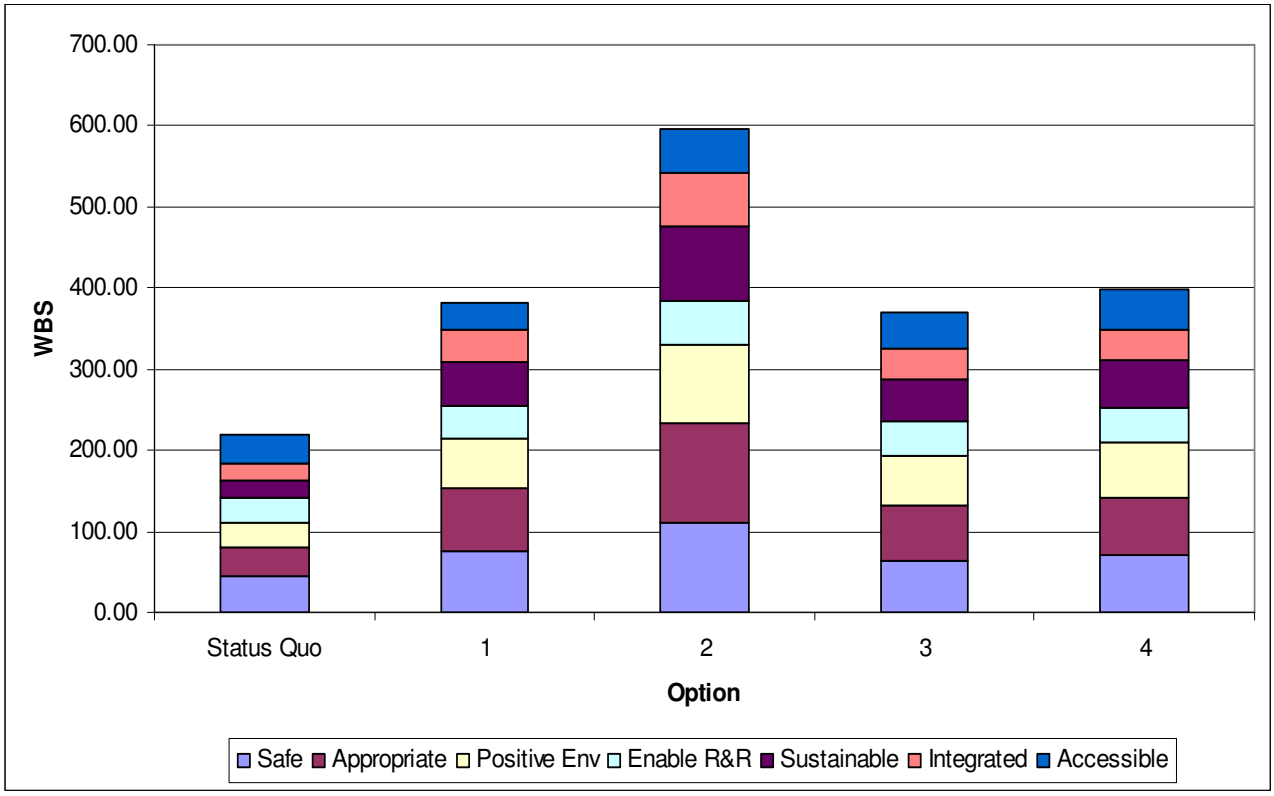
9 Decision analysis

9.1 Base Case Analysis

As outlined previously, data on WBS and costs are brought together and summarised using marginal analysis with respect to the Status Quo/doing nothing option. This process is detailed below.

Figure 1 below shows the WBS for each option for each criterion. It shows the importance given to each criterion in the cumulative weighted score for each option.

Figure 1: Weighted Scores for each option by criterion



Below, Table 8 presents both the discounted costs and the WBS required for the base case analysis. The costs are expressed as the net present value (NPV) of the costs over 50 years.

Table 8: Base Case Analysis

Option	Total WBS	NPV
Option Two New build Ayrshire Central Hospital	597	£ 147,836,343.99
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	398	£ 144,285,844.84
Option One Combined new build and refurbishment of Ailsa	381	£ 141,844,146.02
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	370	£ 144,640,893.49
Status Quo Ailsa, Crosshouse and Ayrshire Central	218	£ 117,355,647.80

Figure 2 below plots each option's WBS against its NPV. Doing so illustrates how much benefit is generated by each option and at what cost.

Figure 2: Base Case Analysis

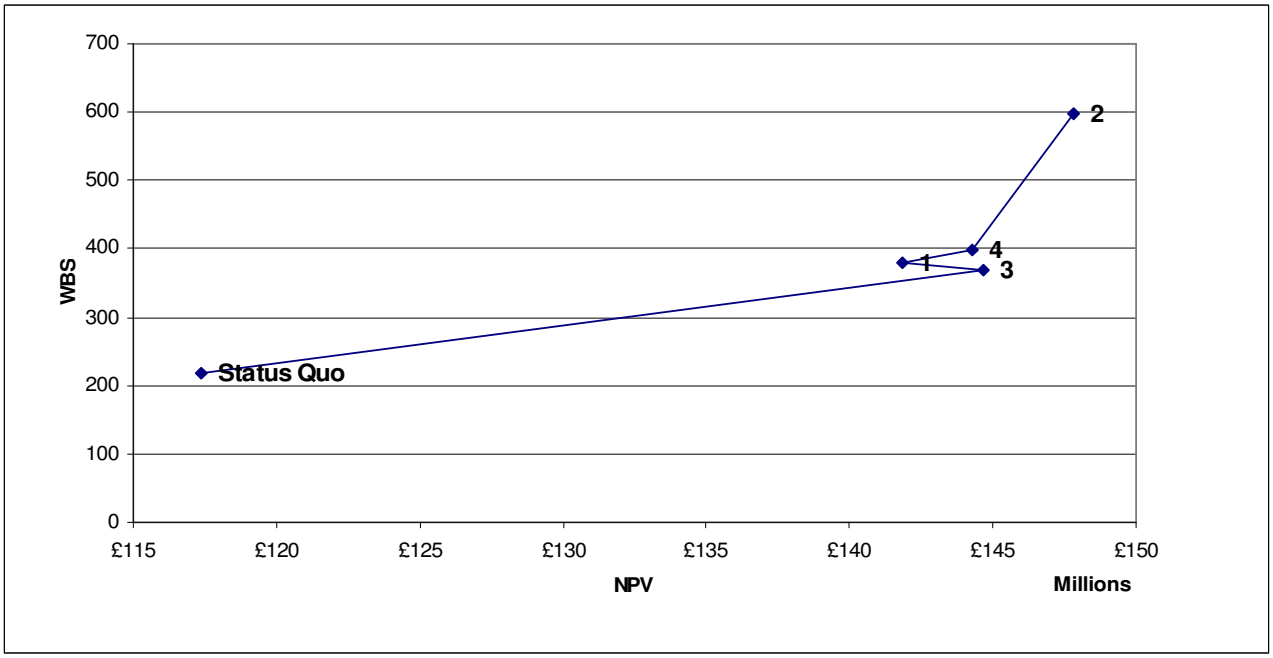


Figure 2 illustrates the analysis of the weighted benefit scores and the discounted costs. In the base case analysis, Option Three is dominated by 1 and 4 i.e. 1 and 4 provide more benefit at less cost. Options 1, 4 and 2 provide more benefit, but cost more than the Status Quo. Marginal analysis is used to determine whether there would be a willingness to pay the additional cost for the additional benefit gained from these options.

In the base case analysis, the cost per benefit point of the Status Quo is £538,034.84. Hence it can be presumed that the maximum willingness-to-pay for a benefit point is less than this level. Marginal analysis indicates that to move from the Status Quo to Option One to gain additional benefit would result in 163 additional benefit points at a cost of £150,588.13 per benefit point. As this additional cost is less than the cost per benefit point for the Status Quo the analysis would imply that there would be a willingness to pay the additional cost to gain the additional benefit that Option One provides. However, Option Four also provides an additional benefit over Option One of 18 points at an additional cost of £138,958.47 per benefit point. As with the move from Status Quo to 1, this additional cost is less than the cost per benefit point for the Status Quo. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit that Option Four provides.

Finally, Option Two provides the most benefit. Moving from Option Four to Option Two provides an additional 198 points of benefit for an additional cost of £ 17,897.38 per benefit point. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit. The preferred option from this base case analysis is therefore Option Two - New build Ayrshire Central Hospital.

9.2 Sensitivity Analysis

Any exercise of this nature requires that a number of assumptions are inherent in the analysis of the costs and benefits associated with each option. Key assumptions are varied to assess the degree of certainty surrounding the selection of a preferred option. Exploring the information in this way improves the robustness of any estimates presented and any subsequent decision analysis.

The sensitivity analysis included determining the preferred option when all groups are given equal weight. The scores were multiplied by the relevant criteria weight and the WBS from each group was aggregated to ensure that the scores from each group were given equal influence.

It is also necessary to determine the preferred option for each group included in the analysis. To do this the scores for each group were multiplied by their groups specific weights. This provided the WBS for each option for each group. Each groups' WBS was then combined with the costs and a marginal analysis undertaken.

The sensitivity analysis was also extended to determine the impact of varying the costs upon the preferred option. Base case WBS were combined with both a set of 'best case' and 'worst case' costs and marginal analysis was performed.

As such, the key aspects of the sensitivity analysis focused on assessing any:

- differences between the four reference groups;
- the preferred option when each group was given equal weight in the scoring process and;
- how best/worse case cost scenarios affected the base case analysis.

The results of this sensitivity analysis demonstrated that the outputs from the Option Appraisal are largely insensitive to the composition of the various groupings participating in the process:

- The preferred option does not vary between the four reference groups, with preference consistently expressed for Option Two;
- Where each group was given equal weight in the scoring process, the preferred option was still found to be Option Two and;
- After accounting for best/worse case costing scenarios, the preferred option was again found to be Option Two.

Full details of this sensitivity analysis can be found in Appendix Four.

10 Conclusions

Option appraisal is a well established form of multi-criteria analysis. Often used to assist decision making, it is particularly useful in addressing projects that have multiple and loosely defined objectives.

The decision analysis involved combining data on the costs and benefits of each option and performing a marginal analysis with respect to the Status Quo/doing nothing option.

Results from the analysis of the base case suggest that the preferred option is Option Two. Seven sensitivity analyses were undertaken and in each case the preferred option remained Option Two - New build Ayrshire Central Hospital.

Appendix One - Weighting for the Four Reference Groups

Table 9: Weighting for the Carers' Group

	Safe	Appropriate	Positive Environment	Enable Recruitment & Retention	Sustainable	Integrated	Accessible
Mean Weight	11	15	14	6	7	8	9

Table 10: Weighting for the Voluntary Organisation's Group

	Safe	Appropriate	Positive Environment	Enable Recruitment & Retention	Sustainable	Integrated	Accessible
Mean Weight	14	14	10	9	8	8	8

Table 11: Weighting for the Get It SUSsed Group

	Safe	Appropriate	Positive Environment	Enable Recruitment & Retention	Sustainable	Integrated	Accessible
Mean Weight	12	12	10	10	6	8	12

Table 12: Weighting for the Fourth Group

	Safe	Appropriate	Positive Environment	Enable Recruitment & Retention	Sustainable	Integrated	Accessible
Mean Weight	13	11	11	7	9	9	9

Appendix Two – Raw score of each option

Raw scores are simply the sum of all individuals' scores for each option, before taking into account criteria weighting.

Table 13: Raw scores for each option before weights and number of individuals are accounted for.

Option	Raw score
Option Two New build Ayrshire Central Hospital	2368
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	1609
Option One Combined new build and refurbishment of Ailsa	1518
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	1500
Status Quo Ailsa, Crosshouse and Ayrshire Central	904

Appendix Three - Costs used in the analysis

The costs for each option are divided into capital and revenue costs and are detailed below. In addition, the refurbishment costs are displayed.

Table 14: Capital and revenue costs:

	Status Quo	Option One	Option Two	Option Three	Option Four
Capital Costs (A)					
(£)	n/a	43,331,459	53,351,953	43,298,468	43,443,747
Revenue Costs (B)					
(£)	16,361,694	15,333,863	15,143,743	15,727,618	15,663,455
Total Capital & Revenue Costs (A + B)					
(£)	16,361,694	58,665,322	68,495,696	59,026,086	59,107,202

Refurbishment costs					
(£)	n/a	23,701,650	7,246,000	17,770,900	14,827,400

Appendix Four - Sensitivity Analysis Results

All groups given equal weight

Figure 3 displays the weighted scores for each option for each criterion using the scores from all the groups combined, with each group given equal weighting. The criteria weights are the overall criteria weights used within the base case.

Figure 3: Weighted Scores for each option by criterion

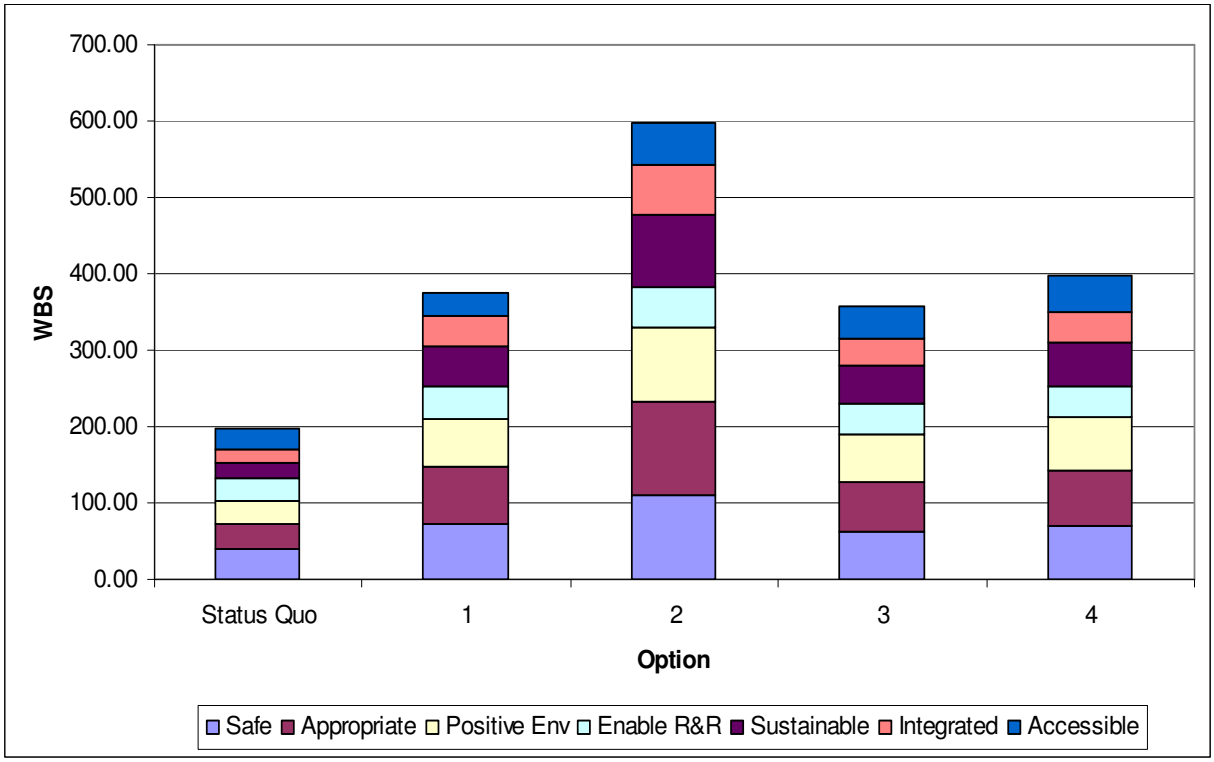


Table 15 below shows the weighted benefit scores and costs, presented as net present values, for each option.

Table 15: Sensitivity analysis –groups given equal influence combined with overall criteria weights

Option	Total WBS	NPV
Option Two New build Ayrshire Central Hospital	598	£147,836,343.99
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	398	£144,285,844.84
Option One Combined new build and refurbishment of Ailsa	375	£141,844,146.02
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	358	£144,640,893.49
Status Quo Ailsa, Crosshouse and Ayrshire Central	198	£ 117,355,647.80

Figure 4 below plots each option's WBS against its NPV. Doing so illustrates how much benefit is generated by each option and at what cost.

Figure 4: Weighted benefit scores and discounted costs

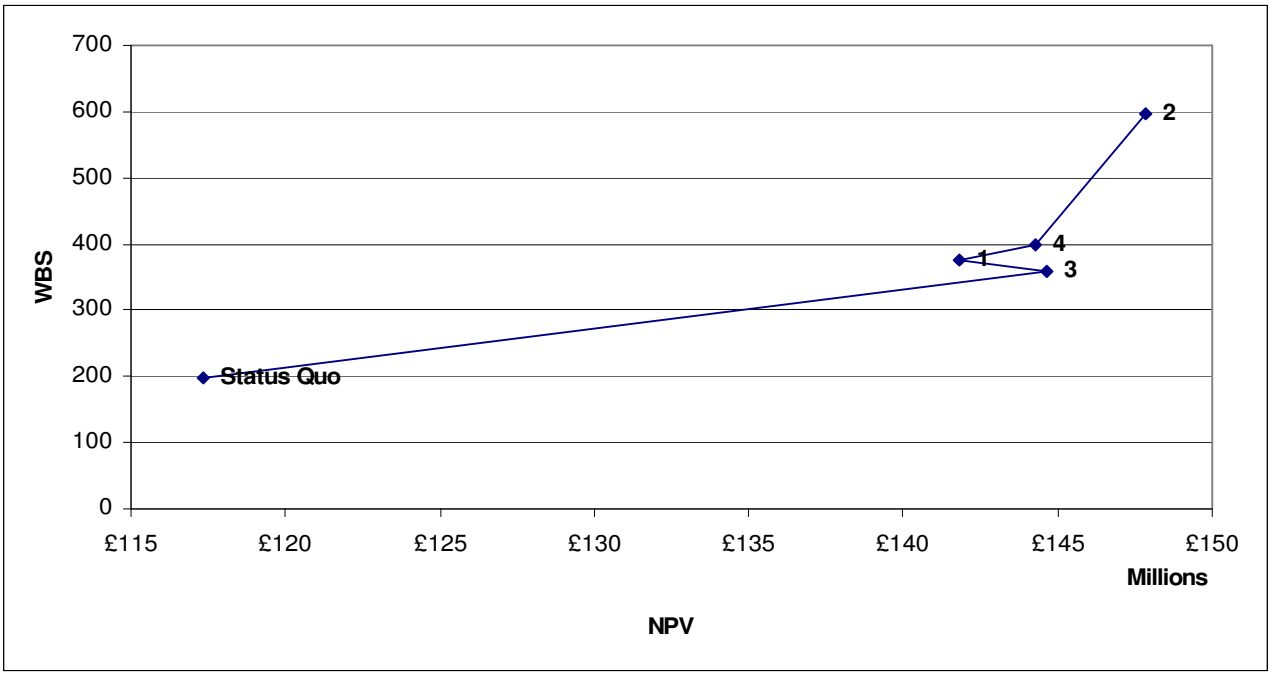


Figure 4 illustrates the analysis of the weighted benefit scores and the discounted costs when each group is given equal weight. In this analysis, Option Three is dominated by 1 and 4 i.e. 1 and 4 provide more benefit at less cost. Options 1, 4 and 2 provide more benefit, but cost more than the Status Quo. Marginal analysis is used to determine whether there would be a willingness to pay the additional cost for the additional benefit gained from these options.

In the equal weight for each group analysis, the cost per benefit point of the Status Quo is £592,705.29. Hence it can be presumed that the maximum willingness-to-pay for a benefit point is less than this level. Marginal analysis indicates that to move from the Status Quo to Option One to gain additional benefit would result in 177 additional benefit points at a cost of £138,581.46 per benefit point. As this additional cost is less than the cost per benefit point for the Status Quo the analysis would imply that there would be a willingness to pay the additional cost to gain the additional benefit that Option One provides. However, Option Four also provides additional benefit over Option One of 23 points at an additional cost of 103,986.36 per benefit point. As with the move from Status Quo to 1, this additional cost is less than the cost per benefit point for the Status Quo. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit that Option Four provides.

Finally, Option Two provides the most benefit. Moving from Option Four to Option Two provides an additional 200 points of benefit for an additional cost of £ 17,766.32 per benefit point. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit. The preferred option from this base case analysis is therefore Option Two - New build Ayrshire Central Hospital.

Fourth Group

Figure 5 below shows the weighted scores for each option for each criterion using the Fourth Groups representative's weights and scores.

Figure 5: Weighted scores for each option by criterion

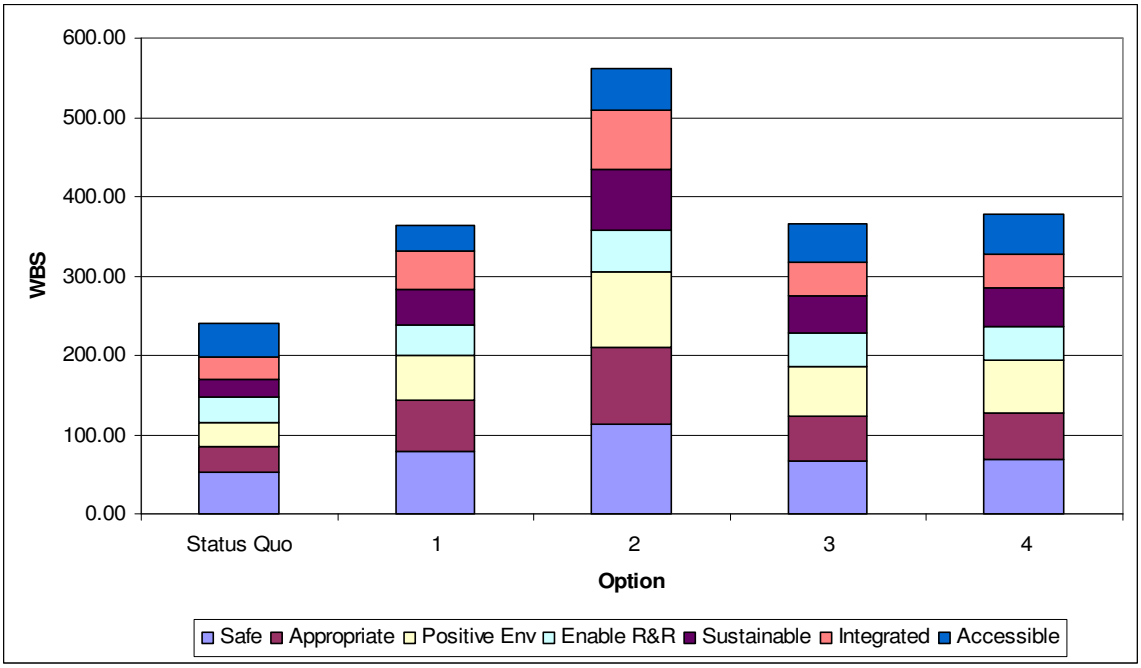


Table 16 below shows the weighted benefit scores and costs, presented as net present values, for each option.

Table 16: Sensitivity analysis – Fourth group weights and scores

Option	Total WBS	NPV
Option Two New build Ayrshire Central Hospital	561	£147,836,343.99
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	379	£144,285,844.84
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	365	£144,640,893.49
Option One Combined new build and refurbishment of Ailsa	363	£141,844,146.02
Status Quo Ailsa, Crosshouse and Ayrshire Central	240	£ 117,355,647.80

Figure 6 below plots each option's WBS against its NPV. Doing so illustrates how much benefit is generated by each option and at what cost.

Figure 6: Weighted benefit scores and discounted costs

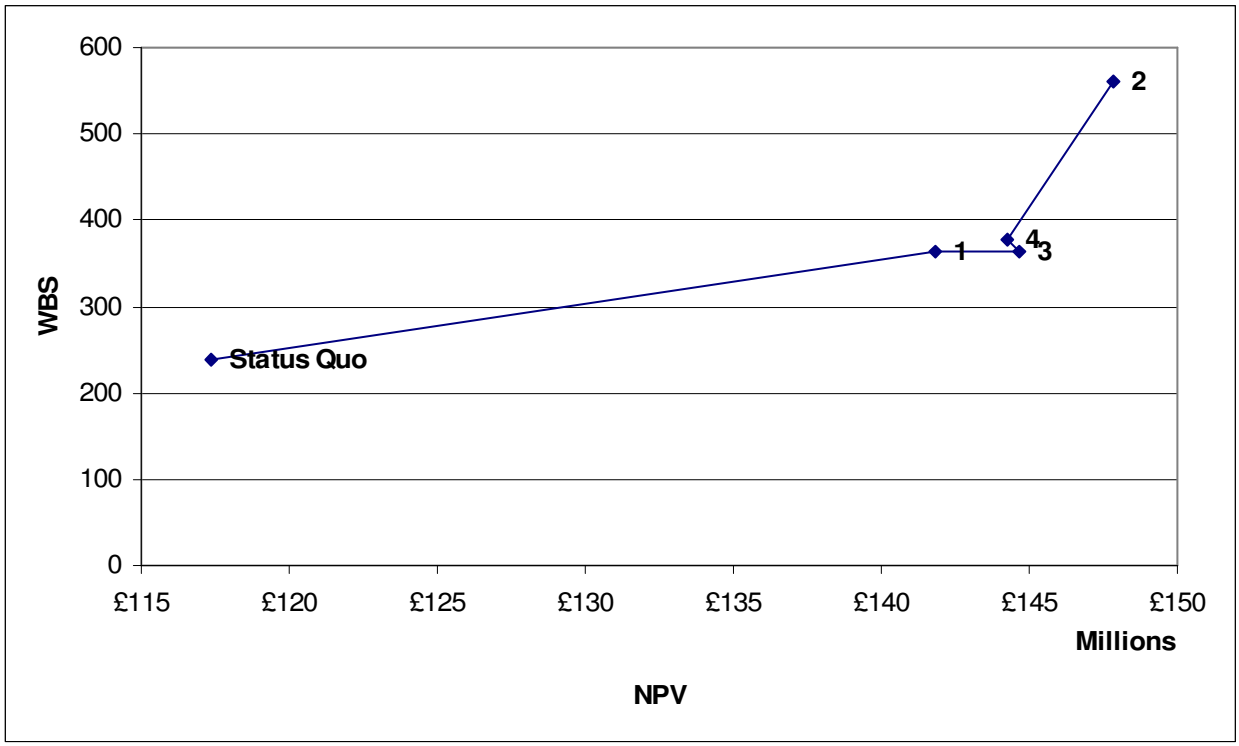


Figure 6 illustrates the analysis of the weighted benefit scores and the discounted costs for the fourth group only. In this analysis, Option Three is dominated by 4 i.e. 4 provides more benefit at less cost. Options 1, 4 and 2 provide more benefit, but cost more than the Status Quo. Marginal analysis is used to determine whether there would be a willingness to pay the additional cost for the additional benefit gained from these options.

In the Fourth Group analysis, the cost per benefit point of the Status Quo is £489,747.10. Hence it can be presumed that the maximum willingness-to-pay for a benefit point is less than this level. Marginal analysis indicates that to move from the Status Quo to Option One to gain additional benefit would result in 124 additional benefit points at a cost of £197,886.85 per benefit point. As this additional cost is less than the cost per benefit point for the Status Quo the analysis would imply that there would be a willingness to pay the additional cost to gain the additional benefit that Option One provides. However, Option Four also provides additional benefit over Option One of 15 points at an additional cost of £161,424.63 per benefit point. As with the move from Status Quo to 1, this additional cost is less than the cost per benefit point for the Status Quo. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit that Option Four provides.

Finally, Option Two provides the most benefit. Moving from Option Four to Option Two provides an additional 183 points of benefit for an additional cost of £19,454.79 per benefit point. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit. The preferred option from this base case analysis is therefore Option Two - New build Ayrshire Central Hospital.

Carers reference group

Figure 7 below shows the weighted scores for each option for each criterion using the Carers representative's weights and scores.

Figure 7: Weighted scores for each option by criterion

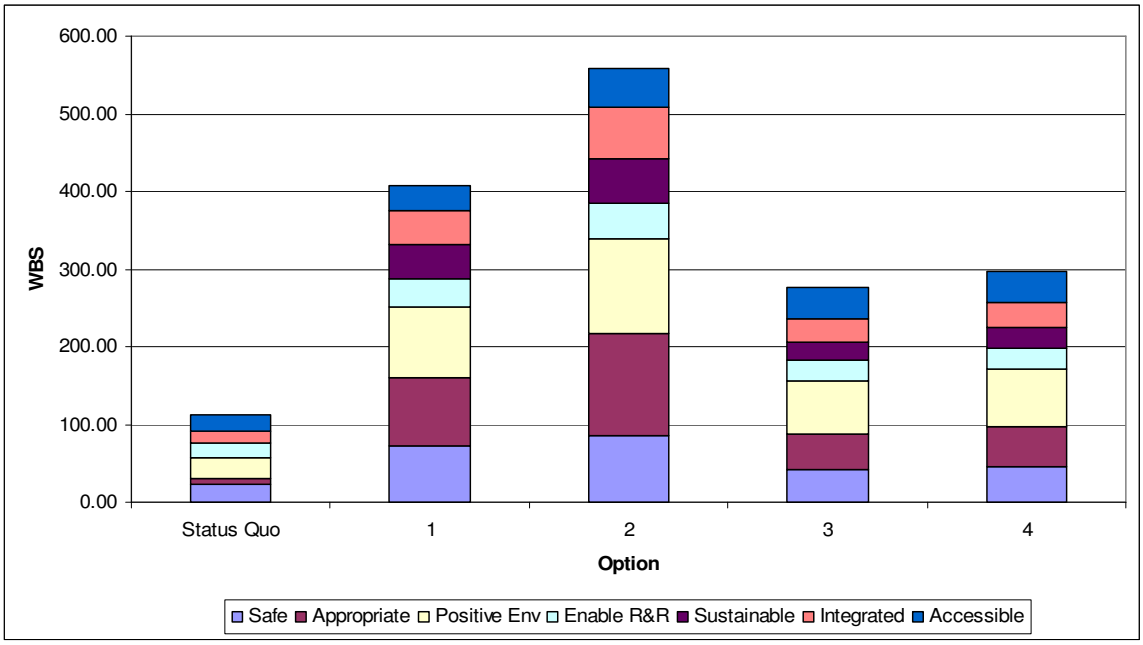


Table 17 below shows the weighted benefit scores and costs, presented as net present values, for each option.

Table 17: Sensitivity analysis – Carers group weights and scores

Option	Total WBS	NPV
Option Two New build Ayrshire Central Hospital	559	£147,836,343.99
Option One Combined new build and refurbishment of Ailsa	408	£141,844,146.02
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	297	£144,285,844.84
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	277	£144,640,893.49
Status Quo Ailsa, Crosshouse and Ayrshire Central	113	£ 117,355,647.80

Figure 8 below plots each option's WBS against its NPV. Doing so illustrates how much benefit is generated by each option and at what cost.

Figure 8: Weighted benefit scores and discounted costs

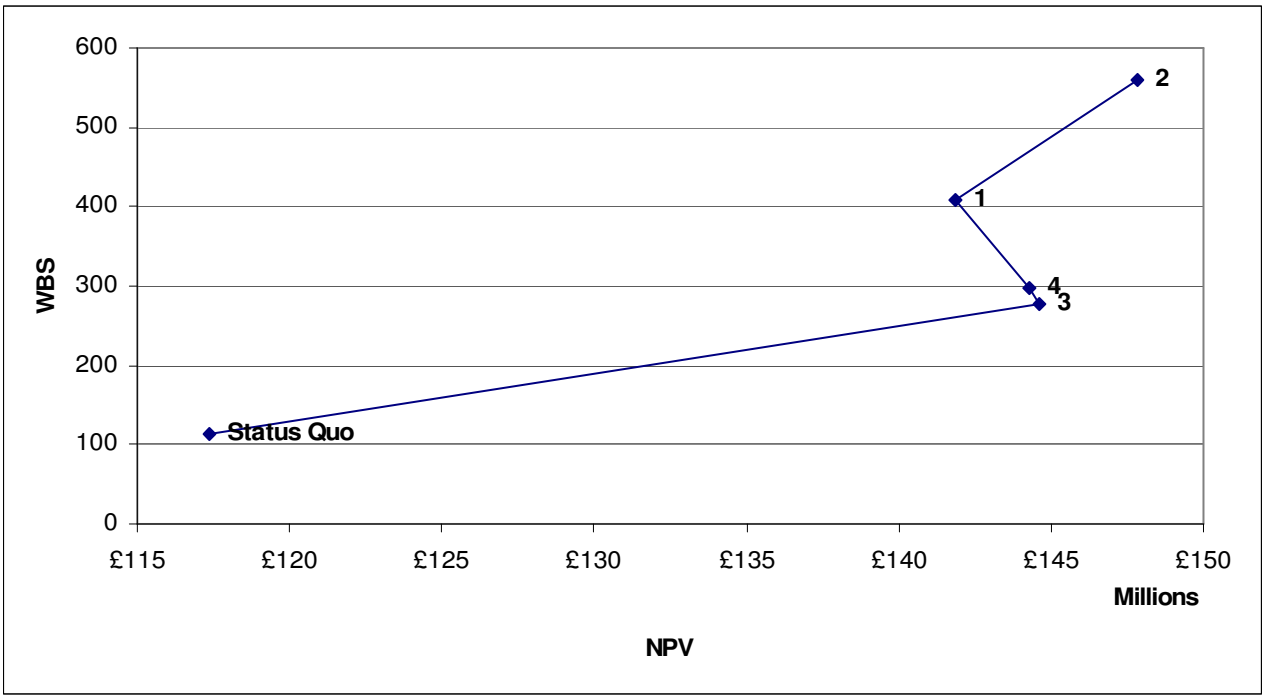


Figure 8 illustrates the analysis of the weighted benefit scores and the discounted costs for the Carer Group only. In this analysis, options 3 and 4 are dominated by 1 i.e. 1 provides more benefit at less cost. Options 1 and 2 provide more benefit, but cost more than the Status Quo. Marginal analysis is used to determine whether there would be a willingness to pay the additional cost for the additional benefit gained from these options.

In the Carer Group analysis, the cost per benefit point of the Status Quo is £1,042,499.41. Hence it can be presumed that the maximum willingness-to-pay for a benefit point is less than this level. Marginal analysis indicates that to move from the Status Quo to Option One to gain additional benefit would result in 295 additional benefit points at a cost of £82,931.54 per benefit point. As this additional cost is less than the cost per benefit point for the Status Quo the analysis would imply that there would be a willingness to pay the additional cost to gain the additional benefit that Option One provides.

However, Option Two provides the most benefit. Moving from Option One to Option Two provides an additional 151 points of benefit for an additional cost of £39,758.66 per benefit point. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit. The preferred option from this base case analysis is therefore Option Two - New build Ayrshire Central Hospital.

Get it SUSsed group

Figure 9 below shows the weighted scores for each option for each criterion using the Get it SUSsed group representative's weights and scores.

Figure 9: Weighted scores for each option by criterion

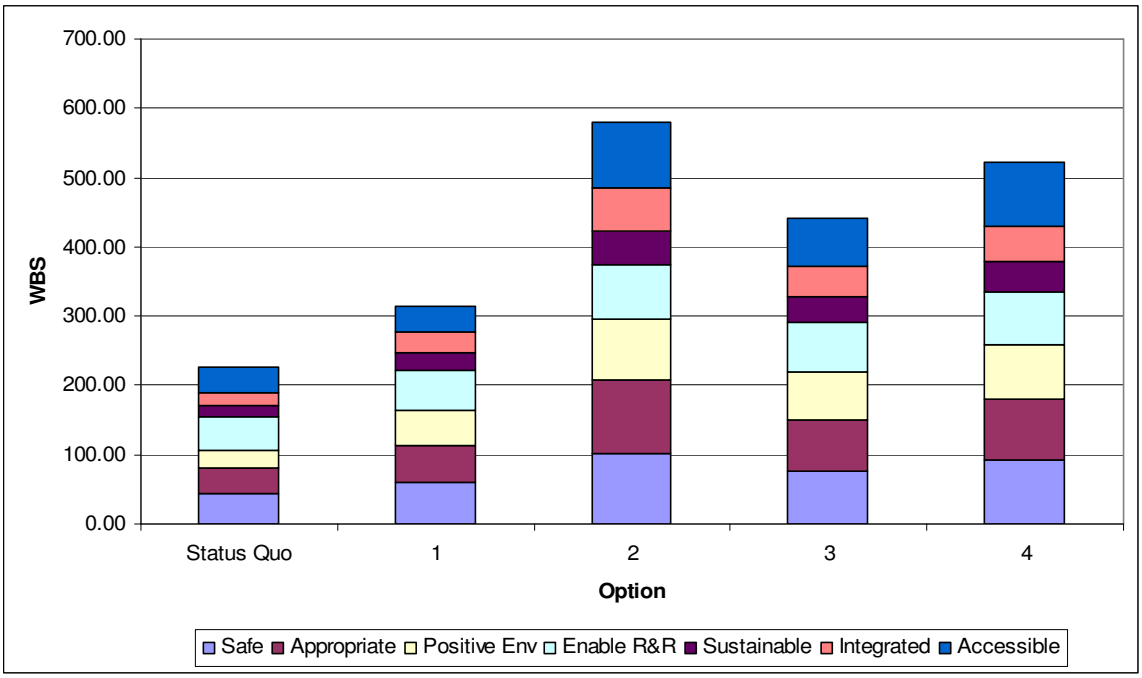


Table 18 below shows the weighted benefit scores and costs, presented as net present values, for each option.

Table 18: Sensitivity analysis – Get it SUSsed reference group weights and scores

Option	Total WBS	NPV
Option Two New build Ayrshire Central Hospital	581	£147,836,343.99
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	522	£144,285,844.84
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	442	£144,640,893.49
Option One Combined new build and refurbishment of Ailsa	314	£141,844,146.02
Status Quo Ailsa, Crosshouse and Ayrshire Central	227	£ 117,355,647.80

Figure 10 below plots each option's WBS against its NPV. Doing so illustrates how much benefit is generated by each option and at what cost.

Figure 10: Weighted benefit scores and discounted costs

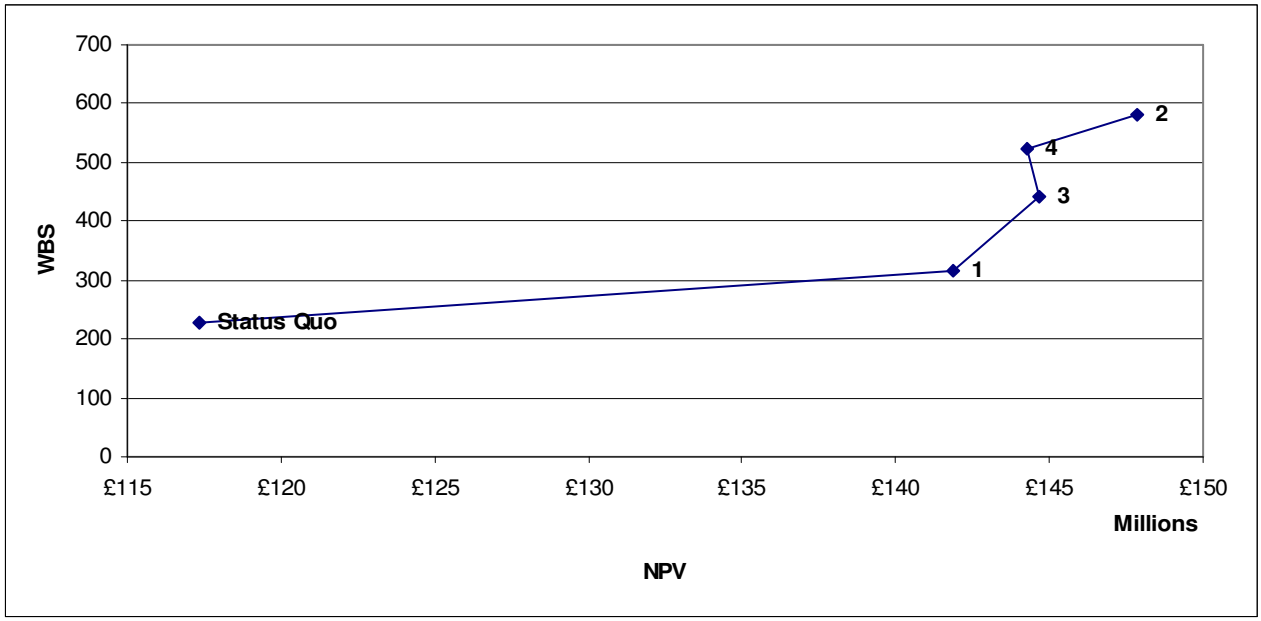


Figure 10 illustrates the analysis of the weighted benefit scores and the discounted costs for the Get it SUSsed reference group only. In this analysis, Option Three is dominated by 4 i.e. 4 provides more benefit at less cost. Options 1, 4 and 2 provide more benefit, but cost more than the Status Quo. Marginal analysis is used to determine whether there would be a willingness to pay the additional cost for the additional benefit gained from these options.

In the Get it SUSsed reference group analysis, the cost per benefit point of the Status Quo is £517,745.51. Hence it can be presumed that the maximum willingness-to-pay for a benefit point is less than this level. Marginal analysis indicates that to move from the Status Quo to Option One to gain additional benefit would result in 88 additional benefit points at a cost of £279,336.48 per benefit point. As this additional cost is less than the cost per benefit point for the Status Quo the analysis would imply that there would be a willingness to pay the additional cost to gain the additional benefit that Option One provides. However, Option Four also provides additional benefit over Option One of 208 points at an additional cost of £ 11,757.78 per benefit point. As with the move from Status Quo to 1, this additional cost is less than the cost per benefit point for the Status Quo. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit that Option Four provides.

Finally, Option Two provides the most benefit. Moving from Option Four to Option Two provides an additional 59 points of benefit for an additional cost of £60,177.95 per benefit point. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit. The preferred option from this base case analysis is therefore Option Two - New build Ayrshire Central Hospital.

Voluntary Organisation Consortium reference group.

Figure 11 below shows the weighted scores for each option for each criterion using the Voluntary Organisations Consortium representative's weights and scores.

Figure 11: Weighted scores for each option by criterion

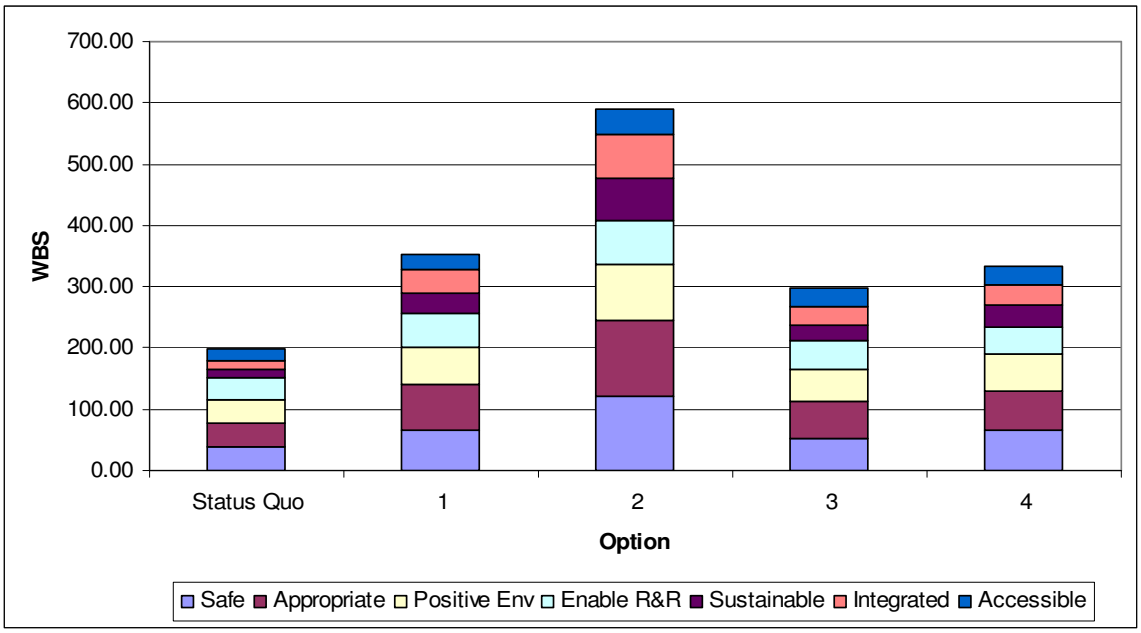


Table 19 below shows the weighted benefit scores and costs, presented as net present values, for each option.

Table 19: Sensitivity analysis –Voluntary Organisation Consortium group weights and scores

Option	Total WBS	NPV
Option Two New build Ayrshire Central Hospital	591	£147,836,343.99
Option One Combined new build and refurbishment of Ailsa	353	£141,844,146.02
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	335	£144,285,844.84
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	297	£144,640,893.49
Status Quo Ailsa, Crosshouse and Ayrshire Central	198	£ 117,355,647.80

Figure 12 below plots each option's WBS against its NPV. Doing so illustrates how much benefit is generated by each option and at what cost.

Figure 12: Weighted benefit scores and discounted costs

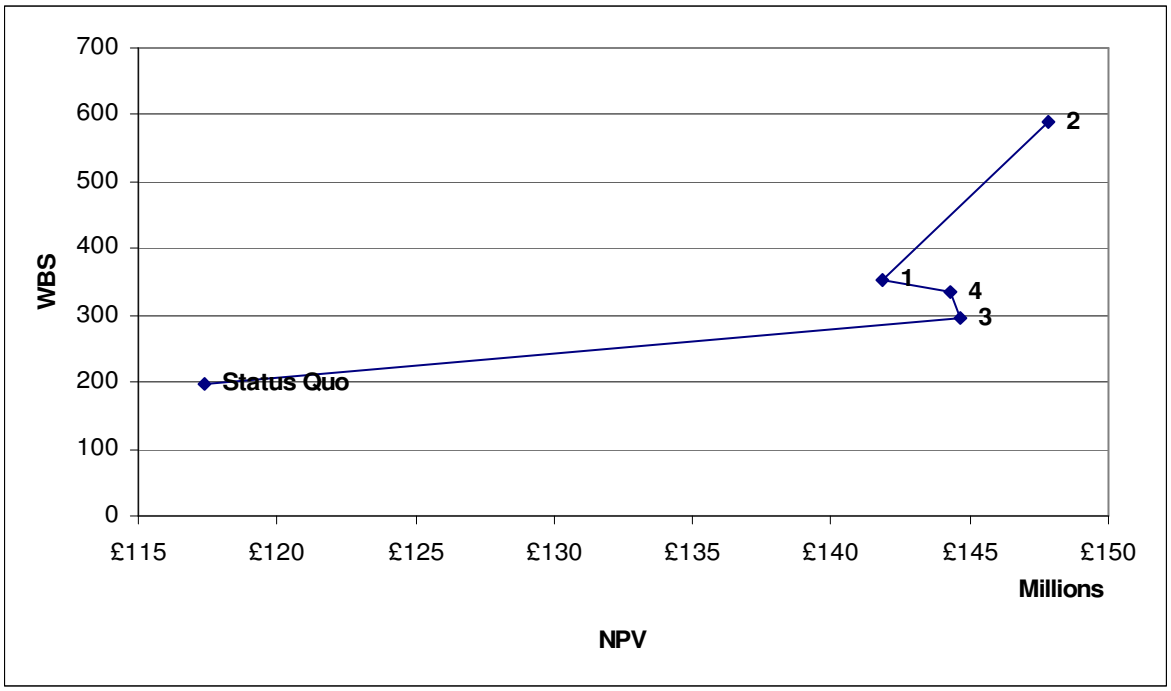


Figure 12 illustrates the analysis of the weighted benefit scores and the discounted costs for the Voluntary Organisation Consortium group only. In this analysis, options 3 and 4 are dominated by 1 i.e. 1 provides more benefit at less cost. Options 1 and 2 provide more benefit, but cost more than the Status Quo. Marginal analysis is used to determine whether there would be a willingness to pay the additional cost for the additional benefit gained from these options.

In the Voluntary Organisation Consortium group analysis, the cost per benefit point of the Status Quo is £591,510.32. Hence it can be presumed that the maximum willingness-to-pay for a benefit point is less than this level. Marginal analysis indicates that to move from the Status Quo to Option One to gain additional benefit would result in 155 additional benefit points at a cost of £157,990.31 per benefit point. As this additional cost is less than the cost per benefit point for the Status Quo the analysis would imply that there would be a willingness to pay the additional cost to gain the additional benefit that Option One provides.

However, Option Two provides the most benefit. Moving from Option One to Option Two provides an additional 237 points of benefit for an additional cost of £25,262.22 per benefit point. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit. The preferred option from this base case analysis is therefore Option Two - New build Ayrshire Central Hospital.

Best case costs with baseline scores

Table 20 below shows the weighted benefit scores and costs, presented as net present values, for each option.

Table 20: Sensitivity analysis – best case costs with baseline scores

Option	Total WBS	NPV
Option Two New build Ayrshire Central Hospital	597	£145,483,821.12
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	398	£141,635,845.66
Option One Combined new build and refurbishment of Ailsa	381	£138,467,817.38
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	370	£141,719,128.01
Status Quo Ailsa, Crosshouse and Ayrshire Central	218	£ 117,355,647.80

Figure 13 below plots each option's WBS against its NPV. Doing so illustrates how much benefit is generated by each option and at what cost.

Figure 13: Weighted benefit scores and discounted costs

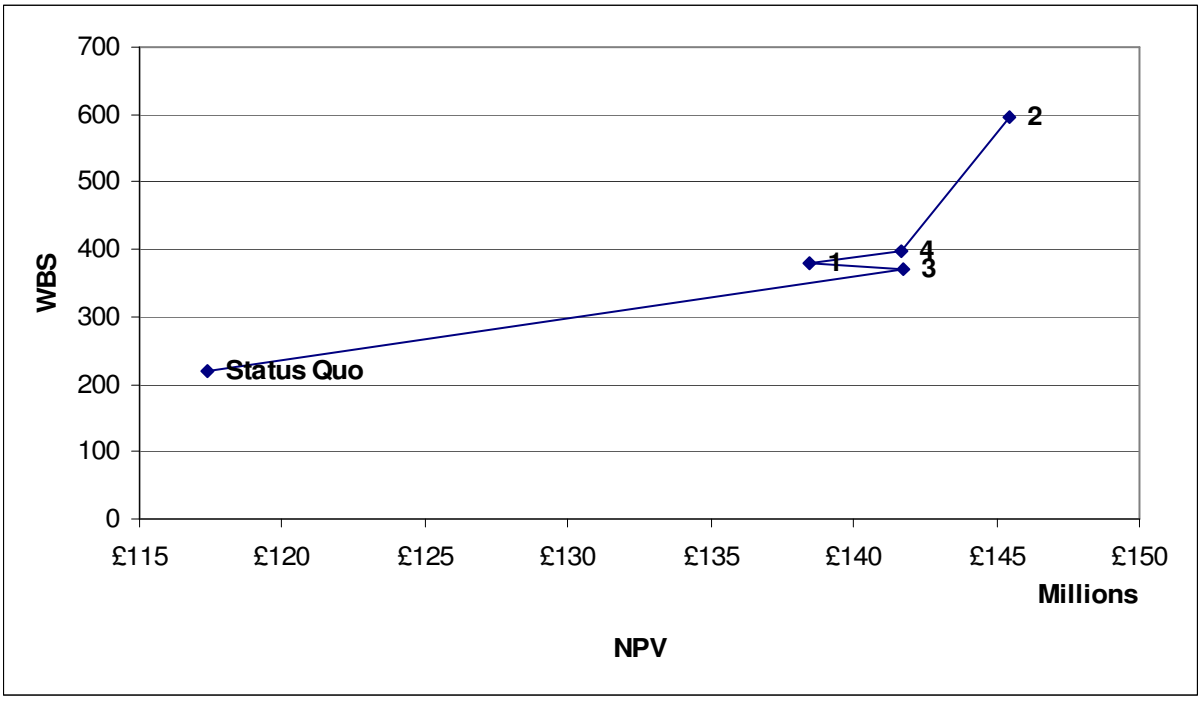


Figure 13 illustrates the analysis of the weighted benefit scores and the discounted costs when using the best case costs. In this analysis, Option Three is dominated by options 1 and 4 i.e. 1 and 4 provide more benefit at less cost. Options 1, 4 and 2 provide more benefit, but cost more than the Status Quo. Marginal analysis is used to determine whether there would be a willingness to pay the additional cost for the additional benefit gained from these options.

In the best case costs analysis, the cost per benefit point of the Status Quo is £538,034.84. Hence it can be presumed that the maximum willingness-to-pay for a benefit point is less than this level. Marginal analysis indicates that to move from the Status Quo to Option One to gain additional benefit would result in 163 additional benefit points at a cost of £129,825.93 per benefit point. As this additional cost is less than the cost per benefit point for the Status Quo the analysis would imply that there would be a willingness to pay the additional cost to gain the additional benefit that Option One provides. However, Option Four also provides additional benefit over Option One of 18 points at an additional cost of £180,294.29 per benefit point. As with the move from Status Quo to 1, this additional cost is less than the cost per benefit point for the Status Quo. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit that Option Four provides.

Finally, Option Two provides the most benefit. Moving from Option Four to Option Two provides an additional 198 points of benefit for an additional cost of £19,396.90 per benefit point. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit. The preferred option from this base case analysis is therefore Option Two - New build Ayrshire Central Hospital.

Worst case costs with baseline scores

Table 21 below shows the weighted benefit scores and costs, presented as net present values, for each option.

Table 21: Sensitivity analysis – best case costs with baseline scores

Option	Total WBS	NPV
Option Two New build Ayrshire Central Hospital	597	£150,460,760.74
Option Four New build Ayrshire central, Combined new build and refurbishment of Ailsa	398	£147,113,524.57
Option One Combined new build and refurbishment of Ailsa	381	£145,354,057.72
Option Three Combined new build and refurbishment of Ailsa, new build Ayrshire Central	370	£147,656,281.33
Status Quo Ailsa, Crosshouse and Ayrshire Central	218	£ 117,355,647.80

Figure 14 below plots each option's WBS against its NPV. Doing so illustrates how much benefit is generated by each option and at what cost.

Figure 14: Weighted benefit scores and discounted costs

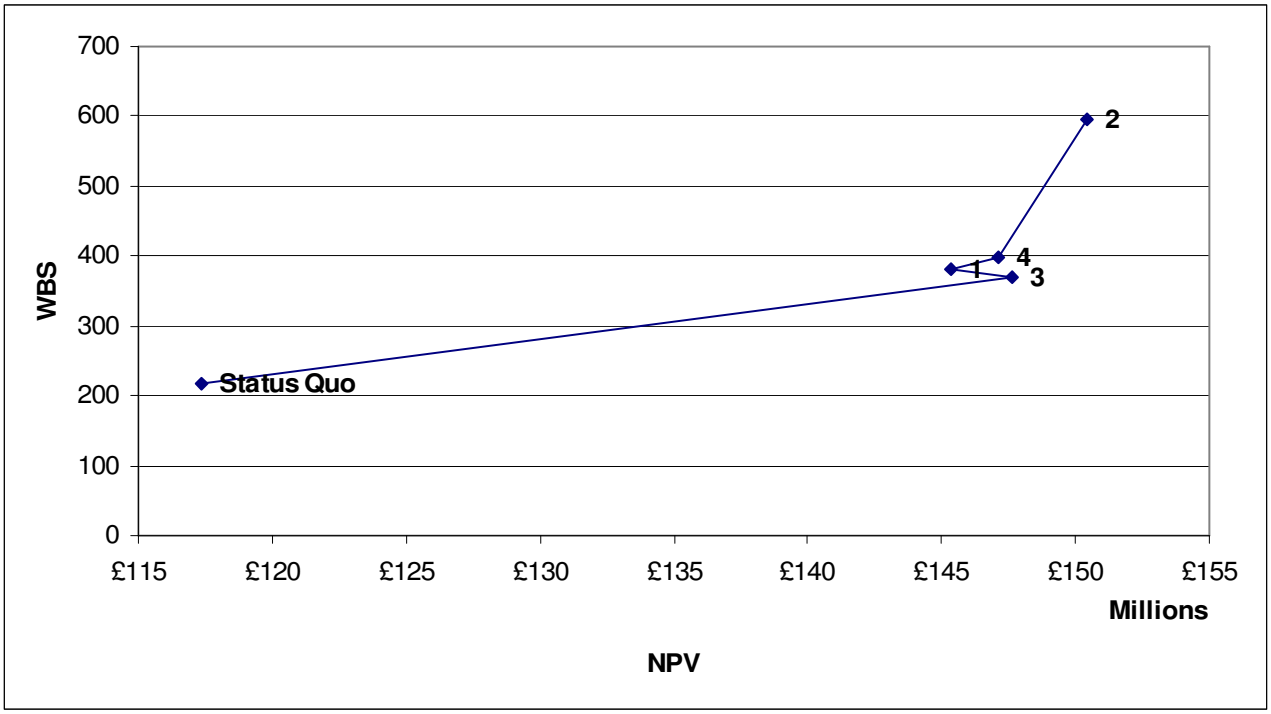


Figure 14 illustrates the analysis of the weighted benefit scores and the discounted costs when using the worst case costs. In this analysis, Option Three is dominated by options 1 and 4 i.e. 1 and 4 provide more benefit at less cost. Options 1, 4 and 2 provide more benefit, but cost more than the Status Quo. Marginal analysis is used to determine whether there would be a willingness to pay the additional cost for the additional benefit gained from these options.

In the best case costs analysis, the cost per benefit point of the Status Quo is £538,034.84. Hence it can be presumed that the maximum willingness-to-pay for a benefit point is less than this level. Marginal analysis indicates that to move from the Status Quo to Option One to gain additional benefit would result in 163 additional benefit points at a cost of £172,171.77 per benefit point. As this additional cost is less than the cost per benefit point for the Status Quo the analysis would imply that there would be a willingness to pay the additional cost to gain the additional benefit that Option One provides. However, Option Four also provides additional benefit over Option One of 18 points at an additional cost of £100,132.26 per benefit point. As with the move from Status Quo to 1, this additional cost is less than the cost per benefit point for the Status Quo. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit that Option Four provides.

Finally, Option Two provides the most benefit. Moving from Option Four to Option Two provides an additional 198 points of benefit for an additional cost of £16,872.77 per benefit point. Analysis would imply that there would be a willingness to pay this additional cost to gain the additional benefit. The preferred option from this base case analysis is therefore Option Two - New build Ayrshire Central Hospital.

Appendix 3C

Optimism Bias Breakdown

NHS Ayrshire & Arran OBC

Scheme name: **North Ayrshire Community Hospital**

Optimism Bias Assessment

Step 1	Calculate Upper bound	Go To Upper Bound Calc
Step 2	Assess the level of mitigation	Go To Mitigation
Step 3	Compute residual optimism bias	

	Option 1 - Do Minimum
Build Complexity	12.0%
Location	16.0%
Scope of Scheme	3.0%
Extent of Service Changes	5.0%
Gateway RPA Category	2.0%
Upper Bound	38.0%
Mitigation Factor	63.0%
Residual Optimism Bias	23.94%

-

Scheme name: **North Ayrshire Community Hospital**

Optimism Bias - Upper Bound Calculation for Build

Lowest % Upper Bound	**13%**
Mid %	**40%**
Upper %	**80%**
Actual % Upper Bound for this project	**38%**

Build complexity

Choose 1 category		X		
Length of Build	< 2 years		0.50%	0
	2 to 4 years		2.00%	0
	Over 4 years	x	5.00%	5.00%
Choose 1 category				
Number of phases	1 or 2 Phases		0.50%	0
	3 or 4 Phases		2.00%	0
	More than 4 Phases	x	5.00%	5.00%
Choose 1 Category				
Number of sites involved (i.e. before and after change)	Single site*		2.00%	0
	2 Site	x	2.00%	2.00%
	More than 2 site		5.00%	0

* Single site means new build is on same site as existing facilities

Location

Choose 1 Category				
New site - Green field	New build		3%	0
New site - Brown Field	New Build		8%	0
Existing site	New Build		5%	0
	or			
Existing site	Less than 15% refurb		6%	0
Existing site	15% - 50% refurb		10%	0
Existing site	Over 50% refurb	x	16%	16.00%

28.00%

Scope of scheme

Choose 1 category		X		
Facilities Management	Hard FM only or no FM	X	0.00%	0.00%
	Hard and soft FM		2.00%	
				0
Choose 1 category				
Equipment	Group 1 & 2 only	X	0.50%	0.50%
	major Medical equipment		1.50%	0
	All equipment included		5.00%	0
Choose 1 category				
IT	No IT implications		0.00%	0
	Infrastructure	X	1.50%	1.50%
	Infrastructure & systems		5.00%	0
Choose more than 1 category if applicable				
External Stakeholders	1 or 2 local NHS organisations	X	1.00%	1.00%
	3 or more NHS organisations		4.00%	0
	Universities/Private/Voluntary sector/Local government		8.00%	0

Service changes - relates to service delivery e.g NSF's

Choose 1 category			
Stable environment, i.e. no change to service	x	5%	5.00%
Identified changes not quantified		10%	0
Longer time frame service changes		20%	0

Gateway

Choose 1 category				
RPA Score	Low		0%	0
	Medium	x	2%	2.00%
	High		5%	0

10.00%

15/11/2011

Scheme name: **North Ayrshire Community Hospital**

Contributory Factor to Upper Bound	% Factor Contributes	% Factor Contributes after mitigation	Explanation for rate of mitigation
Progress with Planning Approval	4	3	
Other Regulatory	4	3	
Depth of surveying of site/ground information	3	2	
Detail of design	4	2	
Innovative project/design (i.e. has this type of project/design been undertaken before)	3	1	
Design complexity	4	1	
Likely variations from Standard Contract	2	1	
Design Team capabilities	3	2	
Contractors' capabilities (excluding design team covered above)	2	2	
Contractor Involvement	2	2	
Client capability and capacity (NB do not double count with design team capabilities)	6	3	
Robustness of Output Specification	25	20	
Involvement of Stakeholders, including Public and Patient Involvement	5	3	
Agreement to output specification by stakeholders	5	3	
New service or traditional	3	1	
Local community consent	3	1	
Stable policy environment	20	12	
Likely competition in the market for the project	2	1	
TOTAL	**100**	**63**	

Note: Across all contributory factors, mitigation would be expected to be greater the greater the extent of risk quantification and risk management.

For information, not for completion

Contributory Factor to Upper Bound	% Factor Contributes	Stage	Mitigation Factor
Progress with Planning Approval	4	SOC	Opened discussion with planning authority, some engagement
		OBC	Outline consent in place, with any Planning Conditions and requirements for Section 106 or similar
		FBC	Full Consent in place. Judicial Review period passed.
Other Regulatory	4	SOC	Degree of sign off from Fire Authority, HSE, transport authorities, local government etc.
		OBC	
		FBC	
Depth of surveying of site/ground information	3	SOC	Desktop study undertaken of own site.
		OBC	Investigations undertaken, historical records examined.
		FBC	Full survey of conditions, site services and topographics.
Detail of design	4	SOC	Concept/masterplan/DCP
		OBC	1:500s agreed and selected 1:200s.
		FBC	All 1:200s in place, key 1:50s (depends on procurement route.
Innovative project/design (i.e. has this type of project/design been undertaken before)	3	SOC	
		OBC	Yes/no
		FBC	
Design complexity	4	SOC	This might include complex M&E solutions (requires further development)
		OBC	
		FBC	
Likely variations from Standard Contract	2	SOC	No contract chosen.
		OBC	Yes/no with measurement of scale of variations
		FBC	
Design Team capabilities	3	SOC	Previous relevant experience of individuals involved. Capacity
		OBC	
		FBC	
Contractors' capabilities (excluding design team covered above)	2	SOC	Previous relevant experience of individuals involved. Capacity. Track record of delivery.
		OBC	
		FBC	
Contractor Involvement	2	SOC	Buildability. Opportunity to influence design.
		OBC	
		FBC	
Client capability and capacity (NB do not double count with design team capabilities)	6	SOC	Degree of team in place with relevant experience.
		OBC	Full team in place for procurement.
		FBC	Robust implementation plan in place.
Robustness of Output Specification	25	SOC	Definition of scope and extent of services. Degree of outstanding decisions.
		OBC	
		FBC	
Involvement of Stakeholders, including Public and Patient Involvement	5	SOC	Scope of stakeholders to be involved. Plan in place to engage.
		OBC	Implementation of Plan
		FBC	Involvement demonstrated.
Agreement to output specification by stakeholders	5	SOC	Letters of support from clinicians, Trade Unions, staff groups, patient representatives/groups.
		OBC	
		FBC	
New service or traditional	3	SOC	Assessment of how innovative/new service model is at national/regional/local level. Has this ever been tried before?
		OBC	
		FBC	
Local community consent	3	SOC	Consideration of traffic noise/existence of protestors or pressure groups
		OBC	
		FBC	
Stable policy environment	20	SOC	Degree to which new policy/standards are applicable depending upon which stage is reached.
		OBC	
		FBC	
Likely competition in the market for the project	2	SOC	Degree project has been marketed.
		OBC	Evidence of market interest.
		FBC	Mitigated.
TOTAL	**100**		

NHS Ayrshire & Arran OBC

Scheme name: **North Ayrshire Community Hospital**

Optimism Bias Assessment

Step 1	Calculate Upper bound	Go To Upper Bound Calc
Step 2	Assess the level of mitigation	Go To Mitigation
Step 3	Compute residual optimism bias	

	Preferred Option - Financial case
Build Complexity	6.0%
Location	10.0%
Scope of Scheme	3.0%
Extent of Service Changes	10.0%
Gateway RPA Category	2.0%
Upper Bound	31.0%
Mitigation Factor	28.0%
Residual Optimism Bias	8.68%

-

Scheme name: **North Ayrshire Community Hospital**

Optimism Bias - Upper Bound Calculation for Build

Lowest % Upper Bound	**13%**
Mid %	**40%**
Upper %	**80%**
Actual % Upper Bound for this project	**31%**

Build complexity

Choose 1 category		X		
Length of Build	< 2 years		0.50%	0
	2 to 4 years	x	2.00%	2.00%
	Over 4 years		5.00%	0

Choose 1 category				
Number of phases	1 or 2 Phases		0.50%	0
	3 or 4 Phases	x	2.00%	2.00%
	More than 4 Phases		5.00%	0

Choose 1 Category				
Number of sites involved	Single site*		2.00%	0
(i.e. before and after	2 Site	x	2.00%	2.00%
change)	More than 2 site		5.00%	0

* Single site means new build is on same site as existing facilities

Location

Choose 1 Category				
New site - Green field	New build		3%	0
New site - Brown Field	New Build		8%	0
Existing site	New Build		5%	0
	or			
Existing site	Less than 15% refurb		6%	0
Existing site	15% - 50% refurb	x	10%	10.00%
Existing site	Over 50% refurb		16%	0

16.00%

Scope of scheme

Choose 1 category		X		
Facilities Management	Hard FM only or no FM	X	0.00%	0.00%
	Hard and soft FM		2.00%	0

Choose 1 category				
Equipment	Group 1 & 2 only	x	0.50%	0.50%
	major Medical equipment		1.50%	0
	All equipment included		5.00%	0

Choose 1 category				
IT	No IT implications		0.00%	0
	Infrastructure	X	1.50%	1.50%
	Infrastructure & systems		5.00%	0

Choose more than 1 category if applicable				
External Stakeholders	1 or 2 local NHS organisations	X	1.00%	1.00%
	3 or more NHS organisations		4.00%	0
	Universities/Private/Voluntary sector/Local government		8.00%	0

Service changes - relates to service delivery e.g NSF's

Choose 1 category				
Stable environment, i.e. no change to service			5%	0
Identified changes not quantified		x	10%	10.00%
Longer time frame service changes			20%	0

Gateway

Choose 1 category				
RPA Score	Low		0%	0
	Medium	x	2%	2.00%
	High		5%	0

15.00%

15/11/2011

Scheme name: **North Ayrshire Community Hospital**

Contributory Factor to Upper Bound	% Factor Contributes	% Factor Contributes after mitigation	Explanation for rate of mitigation
Progress with Planning Approval	4	1	Planning will be have officers recommendation achieved for FBC submission to Board and full by submission to CIG.
Other Regulatory	4	2	Regulations will be taken account of in the developed solution but some issues may new regulations may be applied during the development of the scheme. Building Warrants first two stages will be approved. Fire, HSE, Transport Local Government Historic Scotland are all in hand.
Depth of surveying of site/ground information	3	0	Full survey information will be available at approval of the FBC
Detail of design	4	2	Clinical design will be complete at agreement of Target Cost. Technical design concepts will be fixed but some details design will remain to be undertaken
Innovative project/design (i.e. has this type of project/design been undertaken before)	3	1	Project is not particularly innovative. Lessons have been learnt from a number of other similar schemes
Design complexity	4	1	Design is not particularly complex
Likely variations from Standard Contract	2	0	Contract will be standard Government document.
Design Team capabilities	3	1	Design team is experienced in this type of project
Contractors' capabilities (excluding design team covered above)	2	1	Contractor is experienced in this type of project
Contractor Involvement	2	0	Will be subject to engagement within NPD along with competitive dialogue.
Client capability and capacity (NB do not double count with design team capabilities)	6	3	Client has experience of developing schemes and has experienced advisors
Robustness of Output Specification	25	7	Output specification is signed off by Health Board and User Groups following detailed consultation
Involvement of Stakeholders, including Public and Patient Involvement	5	1	Stakeholders are involved in the scheme. Includes UCI etc.
Agreement to output specification by stakeholders	5	2	Stakeholders have signed off the output specification. Includes workstream meeting involvement.
New service or traditional	3	1	Reprovision of current service in new building
Local community consent	3	0	Local community support of the scheme, open days held.
Stable policy environment	20	5	Policy is fixed
Likely competition in the market for the project	2	0	In discussion with SFT the industry will be very keen to bid for this work.
TOTAL	**100**	**28**	

Note: Across all contributory factors, mitigation would be expected to be greater the greater the extent of risk quantification and risk management.

NHS Ayrshire & Arran OBC

Scheme name: **North Ayrshire Community Hospital**

Optimism Bias Assessment

Step 1	Calculate Upper bound	Go To Upper Bound Calc
Step 2	Assess the level of mitigation	Go To Mitigation
Step 3	Compute residual optimism bias	

	Option 3 - Greenfield
Build Complexity	9.0%
Location	3.0%
Scope of Scheme	11.0%
Extent of Service Changes	20.0%
Gateway RPA Category	2.0%
Upper Bound	45.0%
Mitigation Factor	45.0%
Residual Optimism Bias	20.25%

-

Scheme name: **North Ayrshire Community Hospital**

Optimism Bias - Upper Bound Calculation for Build

Lowest % Upper Bound	**13%**
Mid %	**40%**
Upper %	**80%**
Actual % Upper Bound for this project	**45%**

Build complexity

Choose 1 category		X		
Length of Build	< 2 years		0.50%	0
	2 to 4 years	x	2.00%	2.00%
	Over 4 years		5.00%	0

Choose 1 category				
Number of phases	1 or 2 Phases		0.50%	0
	3 or 4 Phases	x	2.00%	2.00%
	More than 4 Phases		5.00%	0

Choose 1 Category				
Number of sites involved	Single site*		2.00%	0
(i.e. before and after	2 Site		2.00%	0
change)	More than 2 site	x	5.00%	5.00%

* Single site means new build is on same site as existing facilities

Location

Choose 1 Category				
New site - Green field	New build	x	3%	3.00%
New site - Brown Field	New Build		8%	0
Existing site	New Build		5%	0
	or			
Existing site	Less than 15% refurb		6%	0
Existing site	15% - 50% refurb		10%	0
Existing site	Over 50% refurb		16%	0

12.00%

Scope of scheme

Choose 1 category		X		
Facilities Management	Hard FM only or no FM	X	0.00%	0.00%
	Hard and soft FM		2.00%	
				0

Choose 1 category				
Equipment	Group 1 & 2 only		0.50%	0
	major Medical equipment		1.50%	0
	All equipment included	x	5.00%	5.00%

Choose 1 category				
IT	No IT implications		0.00%	0
	Infrastructure		1.50%	0
	Infrastructure & systems	x	5.00%	5.00%

Choose more than 1 category if applicable				
External Stakeholders	1 or 2 local NHS organisations	X	1.00%	1.00%
	3 or more NHS organisations		4.00%	0
	Universities/Private/Voluntary sector/Local government		8.00%	0

Service changes - relates to service delivery e.g NSF's

Choose 1 category				
Stable environment, i.e. no change to service			5%	0
Identified changes not quantified			10%	0
Longer time frame service changes		x	20%	20.00%

Gateway

Choose 1 category				
RPA Score	Low		0%	0
	Medium	x	2%	2.00%
	High		5%	0

33.00%

15/11/2011

Scheme name: **North Ayrshire Community Hospital**

Contributory Factor to Upper Bound	% Factor Contributes	% Factor Contributes after mitigation	Explanation for rate of mitigation
Progress with Planning Approval	4	4	
Other Regulatory	4	4	
Depth of surveying of site/ground information	3	3	
Detail of design	4	2	
Innovative project/design (i.e. has this type of project/design been undertaken before)	3	1	
Design complexity	4	2	
Likely variations from Standard Contract	2	1	
Design Team capabilities	3	1	
Contractors' capabilities (excluding design team covered above)	2	1	
Contractor Involvement	2	1	
Client capability and capacity (NB do not double count with design team capabilities)	6	3	
Robustness of Output Specification	25	8	
Involvement of Stakeholders, including Public and Patient Involvement	5	3	
Agreement to output specification by stakeholders	5	3	
New service or traditional	3	1	
Local community consent	3	2	
Stable policy environment	20	5	
Likely competition in the market for the project	2	0	
TOTAL	**100**	**45**	

Note: Across all contributory factors, mitigation would be expected to be greater the greater the extent of risk quantification and risk management.

For information, not for completion

Contributory Factor to Upper Bound	% Factor Contributes	Stage	Mitigation Factor
Progress with Planning Approval	4	SOC	Opened discussion with planning authority, some engagement
		OBC	Outline consent in place, with any Planning Conditions and requirements for Section 106 or similar
		FBC	Full Consent in place. Judicial Review period passed.
Other Regulatory	4	SOC	Degree of sign off from Fire Authority, HSE, transport authorities, local government etc.
		OBC	
		FBC	
Depth of surveying of site/ground information	3	SOC	Desktop study undertaken of own site.
		OBC	Investigations undertaken, historical records examined.
		FBC	Full survey of conditions, site services and topographics.
Detail of design	4	SOC	Concept/masterplan/DCP
		OBC	1:500s agreed and selected 1:200s.
		FBC	All 1:200s in place, key 1:50s (depends on procurement route.
Innovative project/design (i.e. has this type of project/design been undertaken before)	3	SOC	
		OBC	Yes/no
		FBC	
Design complexity	4	SOC	This might include complex M&E solutions (requires further development)
		OBC	
		FBC	
Likely variations from Standard Contract	2	SOC	No contract chosen.
		OBC	Yes/no with measurement of scale of variations
		FBC	
Design Team capabilities	3	SOC	Previous relevant experience of individuals involved. Capacity
		OBC	
		FBC	
Contractors' capabilities (excluding design team covered above)	2	SOC	Previous relevant experience of individuals involved. Capacity. Track record of delivery.
		OBC	
		FBC	
Contractor Involvement	2	SOC	Buildability. Opportunity to influence design.
		OBC	
		FBC	
Client capability and capacity (NB do not double count with design team capabilities)	6	SOC	Degree of team in place with relevant experience.
		OBC	Full team in place for procurement.
		FBC	Robust implementation plan in place.
Robustness of Output Specification	25	SOC	Definition of scope and extent of services. Degree of outstanding decisions.
		OBC	
		FBC	
Involvement of Stakeholders, including Public and Patient Involvement	5	SOC	Scope of stakeholders to be involved. Plan in place to engage.
		OBC	Implementation of Plan
		FBC	Involvement demonstrated.
Agreement to output specification by stakeholders	5	SOC	Letters of support from clinicians, Trade Unions, staff groups, patient representatives/groups.
		OBC	
		FBC	
New service or traditional	3	SOC	Assessment of how innovative/new service model is at national/regional/local level. Has this ever been tried before?
		OBC	
		FBC	
Local community consent	3	SOC	Consideration of traffic noise/existence of protestors or pressure groups
		OBC	
		FBC	
Stable policy environment	20	SOC	Degree to which new policy/standards are applicable depending upon which stage is reached.
		OBC	
		FBC	
Likely competition in the market for the project	2	SOC	Degree project has been marketed.
		OBC	Evidence of market interest.
		FBC	Mitigated.
TOTAL	**100**		

Appendix 3D

Risk Register

RISK REGISTER

Project Title:	A&A North Ayrshire Community Hospital		Risk Champion:						
Date Register First Created:	06/09/2011	Date Updated:	14/10/2011	Revision Number:	1	Updated by:	NHS Ayrshire & Arran	Current Stage:	OBC

Control Buttons: High Risks | Medium Risks | Low Risks | Active Risks | Closed Risks | Overdue Risk | Action Date Approaching | Reset

			Prior to Mitigation						Post Mitigation				-	-	-						
Ref No:	Risk Description	Definition	Probability (1-5)	Impact (1-5)	Risk Rating (1-25)	Action Plan Completed?	Time / Cost Impact	Mitigation	Probability (1-5)	Impact (1-5)	Risk Rating (1-25)	Time / Cost Impact	Agreed Project Co. Provision	Agreed Board Provision	Agreed Project Co. Time	Agreed Board Time	Risk Actions	Risk Manager (if not Risk Owner)	Action Date	Days to Action Date	Closed Out
1.00	Design Risks																				
1.01	May fail to identify appropriate Stakeholders		2	3	6		T&C	Stake holder map to be drawn up.	2	2	4		-	-	-	0	Mitigate	Jim Crichton	31/03/2016	1596	N
1.02	May fail to engage with Stakeholders		2	3	6		T&C	Stake holder map to be drawn up.	2	2	4		-	-	0	0	Mitigate	Jim Crichton	31/03/2016	1596	N
1.03	Stakeholder may have contradictory aspirations		4	3	12		C	Effective communication plan has been established, production of design statement in mitigation	2	2	4		-	-	0	0	Mitigate	Jim Crichton	31/03/2016	1596	N
1.04	May not involve appropriate Professional expertise, (Design, Commercial, Clinical)		2	4	8		C	SFT Framework pre-qualification process for Advisors is robust. Board input by project owner and sponsor for clinical needs Wide consultation within client body	2	2	4		-	-	0	0	Mitigate	Iain Fairley	31/03/2013	500	N
1.05	May fail to establish Financial Parameters, (Future Maintenance Costs)		3	4	12		C	Overall budget being developed by Project Team. Involvement of Estates and FM to review design.	2	3	6		-	-	0	0	Mitigate		31/03/2016		N
1.06	May fail to establish Financial Parameters, (Capital, Revenue, WLC)		3	4	12		C	Overall affordability / budget has been established and is will be regularly checked by our Financial Advisor and	1	2	2		-	-	0	0	Avoid		31/03/2016	1596	N
1.07	May fail to define appropriately the Clinical Need		2	4	8		T&C	Clinical specification to be developed by the stakeholder in conjunction with the healthcare planner	2	2	4		-	-	0	0	Mitigate	Linda Boyd	14/12/2010	-338	N
~~1.08~~	~~May fail to define appropriately the Clinical Need - Functional~~		2	4	8		~~T&C~~	~~Risk all ready covered by risk nr 8~~			0		-	-	~~0~~	~~0~~				~~-40864~~	~~X~~
~~1.09~~	~~May fail to define appropriately the Clinical Need - IPCU~~		3	4	12		~~T&C~~	~~Risk all ready covered by risk nr 8~~			0		-	-	~~0~~	~~0~~				~~-40864~~	~~X~~
~~1.10~~	~~May fail to define appropriately the Clinical Need - Rehab~~		3	4	12		~~T&C~~	~~Risk all ready covered by risk nr 8~~			0		-	-	~~0~~	~~0~~				~~-40864~~	~~X~~
1.11	May fail to define appropriately the Clinical Need - Non Clinical Areas		3	4	12		T&C	Clinical specification to be developed by the stakeholder in conjunction with the healthcare planner	2	2	4		-	-	0	0	Mitigate	Linda Boyd	14/12/2010	-338	N
~~1.12~~	~~There may be insufficient capital funds to deliver the full Clinical Requirement~~		4	4	16		~~C~~	~~Regularly monitor the project estimated affordability against the variety of information and SoA provided by the Client and Core Team members~~			0		-	-	~~0~~	~~0~~				~~-40864~~	~~X~~
1.13	Clinical Brief must reflect the current requirements		4	4	16		T&C	Clinical Design protocols document has been developed by the Board and is being followed	1	2	2		-	-	0	0	Accept			-40864	N
~~1.14~~	~~Failure to adequately protect future needs~~		3	4	12			~~Ref Risk Risk closed not applicable as a project construction risk~~			0		-	-	~~0~~	~~0~~				~~-40864~~	~~X~~
1.15	The design may be subject to uncontrolled Scope Creep		3	4	12		C	Control of the scope by the governance structures and robust change control	1	3	3		-	-	0	0	Mitigate	Jim Crichton	31/03/2013	500	N
1.16	Change in design requirements by NHS Ayrshire & Arran		2	4	8			built in clear proposal to have this as a managed process. Clear structure and process agreed	1	3	3						Accept	Jim Crichton			N
1.17	Change in design required by Project Co./SPV	This is a risk that the operator will require changes to the design, leading to additional	2	4	8				1	4	4						Transfer	John Scott			N
1.18	Change in design required due to external influences specific to NHS	There is a risk that the designs will need to change due to legislative	3	4	12				2	3	6						Accept	Jim Crichton			N
1.19	Failure to build to design	Misinterpretation of design or failure to build to specification during construction may lead to	1	4	4				1	4	4						Transfer	John Scott			N
													-								
2.00	Construction and Development Risks												-								
2.01	Incorrect time estimates (construction)	The estimated cost of construction may be incorrect	1	3	3				1	2	2						Transfer	John Scott			N

2.02	The scheme may fail to identify and address Site constraints, (Listed Building status, environmental concerns, ground conditions).		2	3	6		T&C	Early consultation with regulating bodies - planners, building control, Historic Scotland, A number of site investigation surveys are currently being undertaken	2	3	6		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
2.03	May fail to identify ground site conditions under the footprint of existing facilities		1	4	4				1	2	2						Accept	John Scott			N
2.04	Boards may fail to identify project staff requirements		2	5	10		C	Board have identified project staff delivery team	1	3	3		-	-	0	0	Accept	Mark Adderly	31/03/2016	1596	N
~~2.05~~	~~Board may fail to acquire appropriately skilled staff~~		~~3~~	~~5~~	~~15~~		~~C~~	~~Project Co. has confidence in the NHS project delivery team~~			0		-	-	~~0~~	~~0~~				~~40864~~	~~Y~~
2.06	Project Co. may fail to acquire appropriately skilled staff		2	4	8		T&C	Skilled staff now in place and performance to be monitored by Project Co. Pre-Construction Manager and PM	2	2	4		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.07	Boards may not have the experience to manage the Project		4	4	16		T&C	Board to put measures in place to provide additional support to project staff where required. Board have also appointed an external PM	1	2	2		-	-	0	0	Mitigate	Dan Doherty	18/08/2010	-456	N
2.08	Project Co. may not have the experience to manage the Project		2	4	8		T&C	Project Co. selected on knowledge of similar schemes and experience	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.09	The Project Co.'s approach to Cost Planning may not be effective		2	4	8		T&C	Contractor have appointed F+G as Cost planners and cost planning will be monitored by C&B	2	2	4		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.10	The Board approach to Cost Planning may not be effective		2	4	8		C	Board have appointed C&B as Cost advisors and cost planning will be monitored board accountants	2	2	4		-	-	0	0	Mitigate	Stuart Sanderson	14/12/2010	-338	N
2.11	May fail to comply with changes to Legislation/Standards - DDA		2	3	6		C	Future-proof design where possible and early consultation with statutory authorities - planners and building control.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.12	May fail to comply with changes to Legislation/Standards - Building Regs		2	3	6		T&C	Future-proof design where possible and early consultation with statutory authorities - planners and building control.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.13	May fail to comply with changes to Legislation/Standards - HTMs		2	3	6		T&C	Future-proof design where possible and early consultation with statutory authorities - planners and building control.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.14	May fail to comply with changes to Legislation/Standards - Fire Regs		2	3	6		T&C	Early consultation with statutory authorities - building control and board fire officer	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.15	May fail to comply with changes to Legislation/Standards - CDM		2	3	6		T&C	Future-proof design where possible and early consultation with statutory authorities - planners and building control.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.16	May fail to comply with changes to Legislation/Standards - BREEAM		2	3	6		T&C	BREEAM assessor has been appointed to carry out BREEAM assessment and monitoring of BREEAM regulations	1	2	2		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.17	May not conduct Equipment Planning effectively		2	4	8		T&C	Board to appointed Equipment Procurement Advisors	3	3	9		-	-	0	0	Transfer	Iain Fairley	31/08/2012	288	N
2.18	The Design may fail to support the Brief		3	4	12		T&C	Clinical Design protocols document to be developed, agreed with the Board and then followed	2	3	6		-	-	0	0	Avoid	Project Co.	31/03/2016	1596	N
2.19	May fail to maintain a consistent interpretation of Standards		2	4	8		T&C	Continuing reference to standards throughout the design, Continuing involvement of healthcare planner	2	2	4		-	-	0	0	Avoid	Project Co.	31/03/2016	1596	N
2.20	Various Programmes & Plans may be misaligned and inconsistent		2	3	6		T&C	A single co-ordinated programme and project completion is to be owned and monitored by the Project Co.	2	2	4		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.21	The Project Co. Programme may not comply with the Project Co. requirements		2	3	6		T	The Project Co. programme is submitted and approved by the Board and becomes part of the scheme contract	2	2	4		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.22	Output Specification may not be adequate or accurate, (Project Co. Stage - review and ownership of existing Ouput Specification)		3	4	12		T&C	Continuing management of the Output Specification and agreement between all parties.	2	2	4		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
2.23	Project Co. may fail to estimate an appropriate level of Design Contingency against the Financial close		3	4	12		T&C	The design will be complete as far as possible when the target price is agreed.	3	3	9		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.24	There may be a lack of resource (Funds, time or people) to complete the OBC and FBC Documents effectively		3	4	12		T&C	Programme Director responsible for the strategy and input requirements from Board for drafting and editing the OBC. Board will make sufficient officer resource available to complete OBC to a	2	3	6		-	-	0	0	Mitigate	Jim Crichton	19/10/2010	-394	N

2.25	Loss of key personnel/expertise to drive the programme e.g. Project Director		2	5	10		T&C	Ensure timely recruitment to any key posts over the course of the development. Ensure full engagement of teams, not just individuals in the delivery of the programme so there is no significant impact on business continuity from staff turnover.	2	3	6						Mitigate	Jim Crichton			
2.26	The Board and Project Co's.'s Commercial Teams may fail to integrate		2	4	8		T&C	Communicaton and dispute strategy to be adopted during invitation to Participate in Dialouge and beyond.	2	2	4		-	-	0	0	Mitigate	John Scott		-40864	N
2.27	May fail to engage with Infection Control during Design		2	4	8		T&C	Infection control to be invited to User Group meetings and first stage of HAIScribe process. Infection Control will be involved in the approvals process.	2	3	6		-	-	0	0	Accept	John Scott	31/03/2016	1596	N
2.28	May fail to engage with Infection Control during Construction		2	4	8		T&C	Continue to use HAIScribe and carry out the Stage 3 assessment prior to construction. Infection Control will be involved in the approvals process.	2	3	6		-	-	0	0	Accept	John Scott	31/03/2016	1596	N
2.29	May fail to adhere to Specifications and Drawings		2	4	8		T&C	Project Co's.'s quality systems will ensure compliance with drawings and specifications. There is provision within the contract for a client site supervisor.	2	2	4		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.30	May use incorrect Procedures and Techniques during Construction		2	4	8		T&C	Project Co. quality systems will ensure compliance with drawings and specifications. There is provision within the contract for a client site supervisor.	2	2	4		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
2.31	Construction Staff may not have the correct skills		2	4	8		T&C	Construction staff will be allocated by the Project Co's.'s Operations Manager ensuring that the correct skills are employed on the project.	2	2	4		-	-	0	0	Transfer	John Scott	31/03/2016	1596	N
2.32	May fail to adhere to Quality Control Procedures		2	4	8		T&C	Project Co. quality systems will be defined in the construction phase Project	2	2	4		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.33	May fail to define the extent of Residual design when calculating Financial Close		3	4	12		T&C	The design will be complete as far as possible when the target price is agreed.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.34	Proposed materials may not be available		3	3	9		T&C	Project Co's.'s procurement Manager will monitor availability of materials during design and pre-construction.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.35	Proposed materials may not be available at original cost		3	4	12		T&C	Project Co. procurement Manager will monitor availability and cost of materials during design and pre-construction.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.36	The Design may not be "buildable"		2	3	6		C	The Project Co. will control and monitor the design process to ensure that the designed solution is buildable	2	3	6		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
2.37	May forecast final costs inaccurately		3	4	12		C	Project Co. and client cost advisors will seek to ensure that robust market testing and benchmarking is carried out to accurately predict outturn cost	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.38	May encounter unforeseen events Archaeology		3	3	9		T&C	Various site investigations and surveys will be progressed prior to Stage 4 construction phase	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.39	May encounter unforeseen events Extreme Weather		3	3	9		T&C	Project Co. will take due cognisance of the potential for exceptionally adverse weather conditions (out with the 10yr norm recorded by the MET office) within the construction programme in relation to the critical path.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.40	May encounter unforeseen events Environmental		3	3	9		T&C	Environmental surveys to be carried out as required.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.41	May encounter unforeseen events Existing Utilities		4	3	12		T&C	Existing Utilities Survey to be carried out on site early in design process.	2	3	6		-	-			Transfer	Project Co.	31/03/2016	1596	N
2.42	May encounter unforeseen events unexpected previous construction.		3	3	9		T&C	Various site investigations and surveys will be progressed and completed prior to Stage 4 construction phase	2	3	6		-	-			Transfer	Project Co.	31/03/2016	1596	N
2.43	May encounter unforeseen events other		3	3	9		T&C		2	3	6		-	-			Transfer	Project Co.	31/03/2016	1596	N
2.44	Lead-in periods may be inaccurate		2	4	8		T&C	Lead-in periods for materials and suppliers will be closely monitored by the Project Co's.'s Procurement Manager	2	3	6		-	-			Transfer	Project Co.	31/03/2016	1596	N
2.45	Project Co. may be unable to acquire people and resources when required (staff & operatives) for the project equivalent Board risk)		2	3	6		T	Project Co. will monitor resources against a pre-construction design & procurement programme and will take any necessary corrective action	2	2	4		-	-			Transfer	Project Co.	31/03/2016	1596	N
2.46	Suppliers and sub-contractors may suffer insolvency or other constraints.		4	4	16		T	Project Co. will procure as many sub-Project Co.s as possible from the preferred suppliers list. Subs with proven track records	3	4	12		-	-			Transfer	Project Co.	31/03/2016	1596	N

2.47	The Public utilities may provide sub-standard service		4	4	16		T&C	Progress on Utilities procurement will be closely monitored by the Project Co. and added to the agenda for the monthly report once construction has commenced on site	3	3	9		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.48	Directly employed sub-contractors may fail to adhere to the Programme.		3	4	12		T&C	Construction programme will be monitored by the Project Co. and accurate monthly reports produced. Weekly meetings will be held with high risk sub-contractors	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.49	Both parties may fail to adopt or maintain a collaborative working relationship.		2	4	8		T	Continue to maintain and then build on the existing relationship formed between the board and Project Co.	2	3	6		-	-	0	0	Mitigate	John Scott		-40864	N
2.50	May fail to appreciate the working environment limitations.		2	3	6		T&C	All outcomes from EIA and site investigation surveys will be addressed early-on.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
2.51	Boards may fail to include adequate contingencies, (Changes to output spec, failure to meet Approval Periods etc.)		3	4	12		T&C	Robust allowances to be agreed between the Project Co., Steering Group and Board for approval periods.	1	3	3		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
~~2.52~~	~~May fail to get access to site when planned~~		3	4	12		~~C~~	~~board to provide agreed time frame when the existing site will be made available in order to maintain the Project Co's.'s programme.~~			0		-		~~0~~	~~0~~	~~Mitigate~~	John Scott		~~-40864~~	~~Y~~
~~2.53~~	~~Failure to obtain capital funds from CIG~~		3	4	12		~~T&C~~	~~Approval to proceed with project required from CIG. Funding already identified by Health Board. Continued discussion between Board officers and CIG members required throughout OBC development to ensure CIG are content with case being produced / A as a project risk as project will not proceed~~			0		-		~~0~~	~~0~~	~~Mitigate~~	Jim Crichton		~~-40864~~	~~Y~~
2.54	Unforeseen or unidentified services.		3	3	9		T&C	Various site investigations and surveys will be progressed and completed prior to Stage 4 construction phase. Any impact on existing services to be considered	3	3	9		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
2.55	Force majeure causing additional costs or termination of the development		2	5	10		T&C	Ensure appropriate insurance cover is in place.	1	1	1		-	-			Accept	Jim Crichton	31/03/2016		N
~~2.56~~	~~Increase in VAT rate beyond 17.5% or other changes~~		4	4	16		~~C~~	~~Cost plan to be has been amended to include 20% VAT. Clinical Brief to be challenged to compensate for this additional pressure on the overall affordability.~~			0		-				~~Mitigate~~	~~Stuart Sanderson~~	14/12/2010	~~-338~~	~~Y~~
2.57	Change in NHS board accounting		3	2	6		C	Health Board Finance dept to provide early warning of any proposed changes in financial accounting systems which could affect overall cost	2	2	4		-	-	0	0	Accept	Stuart Sanderson	31/03/2016	1596	N
2.58	Delay to design process caused by conflict in legislation - e.g. DDA / Infection Control / Building control		4	3	12		T&C	Experience of the design team in designing similar schemes and dealing with similar issues. Early decision making when issues are raised.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
~~2.59~~	~~Failure to comply with SPP6 - (15% reduction in carbon emissions)~~		3	4	12		~~C~~	~~SPP6 requires to be factored into the design by DSSR~~ (therefore a known and no longer a risk) ~~Input required from DSSR~~	3	3	9		-	-	~~0~~	~~0~~				~~-40864~~	~~Y~~
2.60	Timescale required for Board approval of design proposals - delays to programme to FBC		3	3	9		T&C	Papers to be issued to the board in line with the dates on the design programme to allow board approval. May also require additional extraordinary board meetings.	2	3	6		-	-	0	0	Mitigate	John Scott	31/03/2013	500	N
~~2.61~~	~~15 ; Failure to achieve NHS - Council agreement~~		3	4	12			~~*No longer a combined NACH and NAC project*~~			0		-	-	~~0~~	~~0~~	~~Avoid~~	NHS/Council		~~-40864~~	~~Y~~
2.62	Communication (inc public involvement)		3	4	12		C	Continued engagement with the local community through the user and carer groups, the hospital website and the Considerate Constructors Scheme.	2	2	4		-	-	0	0	Mitigate	Jim Crichton	31/12/2016	1871	N
2.63	Lack of clarity in Technical brief with resultant implication on FM strategy		4	4	16			FM strategy doc. to be issued 18-12-09. Project design to be developed in line with FM strategy doc	1	4	4		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
2.64	Unauthorised personnel entering site resulting in potential H&S risk		3	3	9			Project Co. will erect and maintain a secure site boundary fencing system with safety warning signs	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N

2.65	Incorrect time & Cost estimates for Service Continuity		3	4	12			Preferred decant option has been identified and shall be managed by-Service Continuity group	2	4	8		-	-	0	0	Mitigate	Iain Fairley	31/01/2013	441	N
2.66	Change in political policies may impact capital funding		4	4	16			Monitor situation, develop a contingency plan and submit a robust OBC.	3	3	9		-	-	0	0	Mitigate	Jim Crichton	31/12/2013	775	N
2.67	OBC not approved by the Scottish Government results in additional time/cost to resubmit		3	4	12		T&C	Robust OBC and internal approvals process. Early engagement with CIG (when appropriate)	2	3	6		-	-	0	0	Mitigate	Jim Crichton	31/12/2011	44	N
~~2.68~~	~~Provision of site wide utilities Risk closed duplicate of risk Nrs 85,87 & 89~~		3	4	12		~~T&C~~	~~Ongoing detailed investigation by Project Co. to determine scope/costs~~	2	2	4		-	-	~~0~~	~~0~~				~~40864~~	~~Y~~
2.69	Slippage in the development timescales may incur additional funding requirements		3	4	12		T&C	Impact of additional inflation to be mitigated through a review of the Clinical Brief	2	2	4		-	-	0	0	Mitigate	Jim Crichton	31/03/2016	1596	N
2.70	Change in scope after Financial Close		3	4	12		T&C	Robust change control procedure as detailed in the PEP to be implemented during stage 4	2	4	8		-	-	0	0	Mitigate	Iain Fairley	31/12/2012	410	N
2.71	Increase in VAT rate beyond 20% or other changes		1	4	4		C	Low probability risk that the VAT rate increases further beyond the 20% mark	1	2	2		-	-	0	0	Accept	Stuart Sanderson	31/12/2016	1871	N
2.72	Failure to engage in HUB Scotland process to realise the development within the timescales.		2	5	10			Engage fully with NHS Capital Planning Governance routes.	2	3	6		-	-	0	0	Mitigate	John Scott / Stuart Sanderson/ John Wright	31/12/2011	44	N
2.73	Project Co. default (additional time & cost in appointing a replacement)	In the case of Project Co. default, addictional costs may be incurred in apointing a replacement and may cause a delay	3	5	15			Robust financial checks, protections should be built into the contract.	2	3	6		-				Mitigate	Jim Crichton			N
2.74	Changes in taxation	Changes in taxation may affect the cost of the project	1	2	2			Keep close eye on Scottish Government.	1	1	1						Transfer	Jim Crichton			N
2.75	Protests over siting Mental Health on Ayrshire central site	Risk that this could disrupt construction	1	1	1			Regularly engaged with public reference group, large consultation exercise undertaken to proposed new site. Continued consultation, positive news story, continued use of media strategies	1	1	1						Accept	Jim Crichton			N
2.76	Project Co./Sub contractor industrial dispute may cause construction to be delayed	Industrial action may cause the construction to be delayed, as well as incurring additional management costs	1	3	3				1	2	2						Transfer	John Scott			N
2.77	Estimated cost of commissioning the new hospital may lead to delays and additonal costs	Estimated cost of transferring may be incorrect	2	2	4			Well planned out commissioning project plan. Appointment of Commissioning Team.	1	2	2						Transfer	John Scott			N
2.78	Organisational support for the programme diminishes (e.g. in light of leadership changes in strategic posts/ changes to		2	4	8			Ensure that key stakeholder engagement is maintained through the Business Case process. Ensure that	2	4	8						Mitigate	Jim Crichton			
													-								
3.00	Availability and Performance Risks												-								
~~3.01~~	~~May fail to adequately determine the overall programme~~		3	4	12		~~T&C~~	~~Overall programme has been issued~~			0		-	-	~~0~~	~~0~~				~~40864~~	~~Y~~
3.02	Unable to move into new facility on planned date		3	3	9		T&C	Constant communication between the Project Co. and Project Board will ensure that the handover date is properly forecast. Care can be provided at decant locations until the new facility is ready.	1	3	3		-	-	0	0	Mitigate	Project Co.		-40864	N
~~3.03~~	~~Default by NHS North Ayrshire board.~~		2	5	10		~~T&C~~	~~Maintain open and constant communication between the board and the Project Co.~~			0		-		~~0~~	~~0~~				~~40864~~	~~Y~~
3.04	Existing legal rights of third parties on or adjacent to the site.		2	4	8		C	Board's legal advisors to advise on any third party rights which may have an impact upon this project	2	4	8		-	-	0	0	Accept	Ian Gairns		-40864	N
3.05	Disintegration of relations with the local community		3	4	12		C	Continued engagement with the local community through the user and carer groups, the hospital website and the Considerate Constructors Scheme.	1	3	3		-	-	0	0	Mitigate	Linda Boyd		-40864	N
3.06	~~Project Co. suffers insolvency - Duplicate of 2.72~~		2	4	8		T	~~The Project Co. has already been through the HFS PSCP pre-qualification selection process. Notwithstanding this should the PSCP become insolvent the Board will require to appoint a new PSCP to complete the project~~	1	4	4		-	-	0	0		Dan Doherty	31/12/2016	1871	N

3.07	Advisors suffer insolvency		2	4	8		T	The Advisors has already been through the SFT advisors pre-qualification selection process. Notwithstanding this should the Advisors become insolvent the Board will require to appoint a new Advisors to complete the project	1	2	2		-	-	0	0	Mitigate	Dan Doherty	31/12/2016	1871	N
3.08	Latent defects in new build	Latent defects to the structure of the building(s) which require repair may become	2	2	4				1	1	1		-				Transfer	John Scott			N
3.09	Change in specification initiated by procuring entity	There is a risk that during the operational phase of the project, NHS Ayrshire & Arran will require changes to the specification or material	2	4	8			Building should be robustly flexible in design	1	4	4						Accept	John Scott			N
3.10	Performance of sub-contractors	Poor management of sub-contractors can lead to poor co-ordination and under performance by Project Co.. This may lead to additional costs	2	3	6				2	2	4						Transfer	John Scott			N
3.11	Industrial Action	Industrial action by staff involved in providing Hard FM would lead to higher costs and/or performance failures	2	2	4				1	2	2						Transfer	Jim Crichton			N
3.11	Failure to meet performance standards	Hard FM fail to meet quality standards. This may be costly to rectify, and may incur financial penalties	2	1	2			Financial penalities will be in place	1	1	1						Transfer	Dan Doherty			N
3.12	Availability of facilities	There is a risk that some or all of the facilities may not be available for the use it was intended. There may be costs involved in making the	2	1	2				1	1	1						Transfer	John Scott			N
3.13					0																
													-								
4.00	Operating Cost Risks												-								
~~4.01~~	~~10 ; Failure to shift balance of care~~		3	4	12			~~Agreed this risk is not a Project Construction risk and therefore transferred to the Board Operational risk reg~~			0		-	-	~~0~~	~~0~~		NHS Project Board (JC)		~~40864~~	~~x~~
~~4.02~~	~~16 ; Failure to achieve operational efficiencies~~		3	4	12			~~Agreed this risk is not a Project Construction risk and therefore transferred to the Board Operational risk reg~~			0		-	-	~~0~~	~~0~~		NHS		~~40864~~	~~x~~
~~4.03~~	~~4 ; New bed numbers / capacity~~		3	4	12			~~Number of beds detailed within clinical brief~~			0		-	-	~~0~~	~~0~~		Health Care Managers		~~40864~~	~~x~~
~~4.04~~	~~10 ; Staff concerns/perception travel plan/public transport communication plan~~		3	4	12			~~Agreed this risk is not a Project Construction risk and therefore transferred to the Board Operational risk reg~~			0		-	-	~~0~~	~~0~~		PM/Healthcare Managers		~~40864~~	~~x~~
4.05	Interruption to existing Utility / M&E services during construction		3	4	12			The Project Co. will carry out extensive existing services surveys and provide a contingency plan to ensure existing M&E / utility services are maintained	2	3	6		-	-	0	0	Mitigate	Dan Doherty	31/03/2016	1596	N
~~4.06~~	~~5 ; Losing Identity~~		3	2	6			~~Agreed this risk is not a Project Construction risk and therefore transferred to the Board Operational risk reg~~			0		-	-	~~0~~	~~0~~		Design Team		~~40864~~	~~x~~
~~4.07~~	~~6 ; May fail to draw up an effective clinical decant phasing strategy~~		3	5	15			~~Agreed this risk is not a Project Construction risk and therefore transferred to the Board Operational risk reg~~			0		-	-	~~0~~	~~0~~		MF		~~40864~~	~~x~~
~~4.08~~	~~10 ; Governance issues - A&A NHS Health - NAC Leisure~~		3	5	15			~~No longer a combined NACH and NAC Leisure project~~			0		-	-	~~0~~	~~0~~		Legal		~~40864~~	~~x~~
~~4.09~~	~~15 ; NHS Workforce planning~~		3	2	6			~~Agreed this risk is not a Project Construction risk and therefore transferred to the Board Operational risk reg~~			0		-	-	~~0~~	~~0~~		NHS Service Managers, Line Managers, NAC Leisure		~~40864~~	~~x~~
~~4.10~~	~~16 ; Site user governance~~		4	3	12			~~Agreed this risk is not a Project Construction risk and therefore transferred to the Board Operational risk reg~~			0		-	-	~~0~~	~~0~~		New subgroup of steering group		~~40864~~	~~x~~
4.11	The cost of providing services may be different to the expected costs, due to unexpected changes in the cost of equipment, labour, utilities and other supplies	Project Co. RISK											-				Avoid	Project Co.			

4.12	Incorrect estimate for providing specific services under the contract i.e. FM at the point of market testing	Project Co. RISK															Avoid	Project Co.				
4.13	NHS specific changes to legislation/regulations may lead to additional construction costs, and higher building maintenance, equipment or labour costs	Project Co. RISK															Avoid	Project Co.				
4.14	Legislative/regulatory change: non- NHS specific	Non - specific changes to to legislation/regulations may lead to additional construction costs, and higher maintenance, equipment or labour costs																				
4.15	A change in the level of taxation applied to the project may effect the cost of providing services		3	3	9			Will receive warning on any changes	2	4	8	C					Mitigate	Stuart Sanderson				
4.16	Change in the rate of VAT	This may increase the costs of the provision of services to the NHS body. However changes in VAT are generally refunable to	2	3	6			Will receive warning on any changes	2	2	4						Accept	Jim Crichton				N
4.17	The cost of providing clinical services may be different than expected. These costs include: recruitment, training, equipment and supplies		3	3	9			Restraint on wages	2	2	4						Accept	Jim Crichton				N
4.18	The cost of building and engineering maintenance may be different to the expected costs	Project Co. RISK																				
4.19	Failure to meet energy efficiency targets or to control energy costs	Project Co. RISK																				
4.20	Control of Infection issues through poor Facilities Management.	Project Co. RISK	3					Control of Infection staff will be fully engaged at all stages of the project and will conduct HAI SCRIBE workshops at all releven stages															
4.21	Control of Infection caused by Staff employed and controlled by NHS ayrshire & Arran.	This risk may lead to increased treatment costs and possibly leagal costs.	1	3	3			Control of Infection staff will be fully engaged at all stages of the project and will conduct HAI SCRIBE workshops at all relevent stages	1	2	2						Accept	Jim Crichton				N
4.22	The estimated cost of transfer of the employment of staff uder TUPE, may be incorrect. This includes the cost of legal appeals. NHS A&A may be asked to warrant information		1	1	1			Workforce Planning Strategy and action plan for staff will be in place before construction starts on the new facility.	1	1	1						Accept	Dan Doherty				N
4.23	Estimated cost of restructuring the workforce at anytime during the operating phase, such as recruitment costs and redundancy payments may be incorrect	Project Co. RISK															Transfer	Project Co.				
												-										
5.00	Variability of Revenue Risk											-										
5.01	Board Capital Allocation, not fully developed revenue route as an alternative to capital funding		3	5	15			CEL 29 (2010) states that the Board capital allocation will be based on NRAC. Capital Planning Steering Group will prioritise its Capital spend or will explore alternative revenue funding routes (eg. HUB)	3	4	12		-	-	0	0		Jim Crichton	14/12/2010	-338		N
~~5.02~~	~~Project requires to be revenue neutral~~		4	4	16			~~Making sure the financial model within the OBC demonstrates a revenue neutral position.~~ Risk closed as Business Case would not proceed unless the OBC demonstrates a revenue neutral position	3	4	12		-	-	~~0~~	~~0~~		Jim Crichton		~~-40864~~		~~Y~~
5.03	May fail to realise financial benefit of the estates rationalisation detailed in the OBC		1	2	2			NHS A&A financial dept to advise accordingly	1	2	2		-	-	0	0		Stuart Sanderson	31/12/2016	1871		N
5.04	Non availablity of Facilities. The SPV will incur deductions from the availablity payment	Project Co. risk											-				Transfer	Project Co.				
5.05	Non performace of services. Payment will only be made by NHS A&A for services received	Project Co. risk															Transfer	Project Co.				
5.06	The SPV will incur deductions from the performance payment for the poor performance of services	Project Co. risk															Transfer	Project Co.				

5.07	Changes in the size of the allocation of resources for the provision of health care	There is a risk that the resources allocated to the area are reduced or increased. If such changes do occur, there may be a need to re-scale	5	3	15			Board responsibility to manage revenue pressure.	3	3	9						Accept	Jim Crichton			N
5.08	Changes in the volume of demand for patient services	There is a risk that the volume of demand for health care will change, because of changes in the size of the catchment area. This may occur because there is for example: an unexpected increase in the size of the	2	2	4			built in flexibility within the design and operation of the new Facility	2	1	2						Accept	Jim Crichton			N
5.09	Unexpected changes in medical technology	Unexpected changes in medical technology may lead to a need to re-scale or reconfigure the provision of services	2	2	4				2	1	2						Accept	Jim Crichton			N
5.10	Unexpected sudden increase in demand due to major incident		1	2	2			Rooms are designed to be flexible enough to be used in a major incident	1	1	1						Accept	Jim Crichton			N
5.11	There is a risk that income generating schemes, such as retail outlets generate less or more income than expected	Project Co. risk															Transfer	Project Co.			
5.12	Revenue and Capital allocation from SGHD falls below planned assumptions impactiong on Boards Capital Plan		3	5	15			Ensure close engagement with SGHD on any variance to funding assumptions. Develop options for amandments to capital Plan should funding assumptions have to be amended	2	5	10						Mitigate	Jim Crichton			
													-								
6.00	Termination Risks												-								
6.01	Termination due to default by the procuring entity (NHS A&A)	The risk that NHS A&A defaults leading to contract termination and compensation for the	1	4	4				1	2	2		-				Accept	Jim Crichton			N
6.02	The risk that the SPV or individual service providers default and financiers step in leading to higher costs than agreed in the contract	Project Co. risk																			
6.03	The risk that the SPV defaults and step in rights are exercised by financiers but that they are unsuccessful leading to contract termination	Project Co. risk																			
													-								
7.00	Technology and Obsolescence Risks												-								
7.01	The design may fail to keep abreast with future Clinical, Construction and Legislative requirements	Project Co. risk	3	4	12		C	Future-proof design where possible and Board and Healthcare planner to advise on possible revisions to Health Building Note (HBN's).	1	3	3		-	-	0	0		Iain Fairley	31/03/2013	500	N
7.02	~~There may be changes to Clinical regulations or other related legislation~~ - Duplicate of 4.13		3	3	9		C	Future-proof design where possible and Board and Healthcare planner to advise on possible revisions to HBN's.	1	3	3		-	-	0	0		Linda Boyd	16/09/2010	-427	N
7.03	Buildings, plant and equipment may become obsolete during the contract	Project Co. risk						Project Co. to provide service and function requested													
7.04	Technological change	Technical changes may cause NHS A&A to revise its output specification	2	2	4				1	2	2						Accept	Jim Crichton			N
											0		-								
8.00	Control Risks												-								
8.01	Control of clinical services	NHS A&A retains control of clinical services which means that it retains significant control of the nature of services	1	1	1			Cleaning regimes, portering but this is responsibility of NHS A&A	1	1	1		-				Accept	Jim Crichton			N
8.02	Control of services provided under NPD Contract, subject to 8.01 above	Project Co. risk											-								
9.00	Residual Value Risks												-								
9.01	The risk that NHS A&A will wish to vacate the asset at the end of the contract period, and that the SPV may be faced with decommissioning costs	Project Co. risk											-								
													-								
10.00	Other Project Risks												-								
10.01	May fail to realise the expected contributions, (Land sale, other asset sales, Grants and VAT Recovery)	Predominately relates to NHS A&A's ability to relaise capital receipts	4	4	16		C	VAT Liaison/HMRC have reached agreement on VAT recovery. As per CEL 29 (2010) OBC must be explicit that any capital receipt realised from the sale of land at ACH and mental health rationalisation will be reflected within the OBC.	1	3	3		-		0	0	Mitigate	Stuart Sanderson	14/12/2010	-338	N

10.02	Costs of discharging conditions of Planning Consent may be greater than allowance provided for		3	4	12		C	Early and continuing dialogue with the planning authorities.	2	3	6		-	-	0	0	Avoid	Project Co.	31/03/2016	1596	N
10.03	Planning Approvals may be delayed		4	4	16		C	The Project Co. to continually monitor progress against programme to ensure planning submission date is achieved.	2	3	6		-	-	0	0	Avoid	Project Co.	31/03/2016	1596	N
10.04	Local objection may influence Planning Permissions		3	4	12		C	Continuing engagement with the local community and elected members.	2	3	6		-	-	0	0	Mitigate	Jim Crichton	31/03/2016	1596	N
~~10.05~~	~~The Design may not comply with local Planning Regulations~~		2	4	8		~~T&C~~	~~Early and continuing dialogue with the planning authorities has already taken place.~~			0		-	-	~~0~~	~~0~~				~~40864~~	~~Y~~
~~10.06~~	~~May fail to consult with the Planning Authority Closed duplicate of risk nr 106~~		1	3	3		~~T&C~~	~~Consultation with the planning authority already in progress.~~ 12 week statutory consultation period			0		-	-	~~0~~	~~0~~				~~40864~~	~~Y~~
10.07	May fail to comply with Environmental Regulations		2	4	8		T&C	Consultation with planning and environmental authorities in progress and surveys currently being undertaken	1	2	2		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.08	May fail to comply with Traffic Planning Regulations		2	4	8		T&C	Continuing consultation with the roads department	1	2	2		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.09	May fail to comply with Section 75 Approval		2	4	8		T&C	Early and continuing dialogue with the planning authorities	1	2	2		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.10	May fail to comply with Utilities Regulations		2	4	8		T&C	Early consultation with the statutory authorities and agreement with the requirements	2	3	6		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.11	May fail to realise the expected impairment adjustment from the District Valuer		1	2	2			Current cost plan based upon expected impairment adjustment advice from A&A financial dept	1	2	2		-	-	0	0	Accept	Stuart Sanderson	31/12/2016	1871	N
10.12	Falling land value impact on capital receipts		2	4	8			Design the position of the new build to maximise disposal potential	2	4	8		-	-	0	0	Accept	Stuart Sanderson	31/12/2013	775	N
10.13	Delay in on-site construction programme		3	4	12		T&C	Construction programme will be monitored by the Project Co. and accurate monthly reports produced. Weekly meetings will be held with high-risk sub-contractors	2	3	6		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.14	Delays encountered during final commissioning		3	4	12		T&C	The Project Co.'s commissioning manager will issue a detailed programme showing all pre-commissioning activities and required resources to ensure that there	2	3	6		-	-	0	0			31/03/2016	1596	N
10.15	Removal of excess fill from site		3	2	6		T&C	Early design to be progressed on the basis of balancing cut and fill to ensure that wherever possible no material are removed from site.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
10.16	Diversion of existing underground services - possible impact on existing site.		3	3	9		T&C	Various site investigations and surveys will be progressed and completed prior to Stage 4 construction phase. Any impact on existing services to be considered	3	3	9		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.17	Damage to existing services on site		3	4	12		T&C	Early surveys of existing services will be carried out and service locations proved on site	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
10.18	Suitability of existing electrical infrastructure - not enough capacity for new hospital?		3	4	12		T&C	The Project Co. to confirm location and capacity of existing supply. Project Co. to advise if new utility supply is required for the new hospital	3	2	6		-	-	0	0	Accept	Dan Doherty	31/03/2016	1596	N
~~10.19~~	~~Suitability of existing natural gas infrastructure - not enough capacity for new hospital?~~		3	4	12		~~T&C~~	~~The Project Co. has confirmed location and capacity of existing supply. Project Co. to advises that a new utility supply is not required for the new hospital~~			0		-	-	~~0~~	~~0~~				~~40864~~	~~Y~~
10.20	Suitability of existing water infrastructure - not enough capacity for new hospital?		3	4	12		T&C	Project Co. to confirm location and capacity of existing supply. Project Co. to advise if new utility supply is required for the new hospital	3	2	6		-	-	0	0	Accept	Dan Doherty	31/03/2016	1596	N
~~10.21~~	~~Suitability of existing drainage infrastructure - not enough capacity for new hospital?~~		3	4	12		~~T&C~~	~~Project Co. has confirm location and capacity of existing supply.~~			0		-	-	~~0~~	~~0~~				~~40864~~	~~Y~~
10.22	Suitability of existing sewers infrastructure - not enough capacity for new hospital?		3	4	12		T&C	Project Co. to confirm location and capacity of existing supply. Project Co. to advise if new utility supply is required for the new hospital	3	2	6		-	-	0	0	Accept	Dan Doherty	31/03/2016	1596	N
10.23	Planning risk from the outcome of the Traffic Impact Study		3	4	12		T&C	Early engagement with the local authority to confirm the results of the existing TIS.	2	4	8		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.24	Existing ground conditions - e.g. rock, contaminated land, methane, soft ground.		4	4	16		T&C	Early site investigation surveys to confirm the existing site make-up	4	4	16		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N

10.25	Installation of full sprinkler system due to building classification issues.		3	4	12			Early engagement with building control to confirm the building classifications.	1	4	4		-	-	0	0	Avoid	Dan Doherty	31/03/2016	1596	N
10.26	Delay in achieving building warrant approval		3	3	9		T&C	Application to be submitted in line with the programmed dates. Full submission rather than staged	2	3	6		-	-	0	0	Avoid	Project Co.	31/03/2016	1596	N
10.27	Unforeseen requirements from environmental surveys		3	3	9		T&C	Early completion of the environmental surveys to assess any additional measures	2	3	6		-	-	0	0			31/03/2016	1596	N
10.28	Implications of conditions imposed by adjacent listed buildings (are there any adjacent listed buildings ?)		3	2	6		T&C	Early and continued dialogue with the planning consultees to ensure that there are no unexpected requirements on the hospital design	2	3	6		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.29	Implications of conditions imposed by planning consultees - e.g. Historic Scotland, SNH		3	3	9		T	Early and continued dialogue with the planning consultees to ensure that there are no unexpected requirements on the hospital design	2	3	6		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
~~10.30~~	~~Failure to submit planning before the change in the consultation requirements~~		~~4~~	~~4~~	~~16~~		~~T&C~~	~~Project Co.'s programme takes account of the changes in planning consultation time scale changes~~			0		-	-	~~0~~	~~0~~				~~40864~~	~~X~~
~~10.31~~	~~This project is classed as a 'Major Development' by the planning authority~~		~~5~~	~~2~~	~~10~~		~~T&C~~	~~The project will be a Major Development and this will now be addressed through the new planning procedure.~~			0		-	-	~~0~~	~~0~~				~~40864~~	~~X~~
10.32	Failure to achieve planning permission within the required timescale to meet the FBC		4	3	12		T&C	Continued dialogue with the planning authority and submission of the planning application in line with the programmed date.	2	3	6		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
10.33	Additional costs associated with achieving BREEAM excellent.		3	5	15		C	Early BREEAM assessment to establish requirements, whilst project is striving for BREEAM excellent, BREEAM excellent may not be achievable	3	3	9		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
10.34	Dependence on single source suppliers for specific materials		3	4	12		C	Where possible Project Co.'s designers should not specify materials that are supplied by a single supplier.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
10.35	Failure to achieve zero-defects at completion.		4	3	12		T&C	Project Co. will provide appropriately resourced supervision during the construction stage to carrying out the work on site and quality management of the works in progress. Project Co. to adopt a proprietary snagging system to monitor and manage the snagging process.	2	3	6		-	-	0	0	Transfer	Project Co.	31/03/2016	1596	N
10.36	21 ; Volatile market conditions		4	4	16			Project Co. to take due cognisance of market conditions when providing the Target Cost. Cost plan allows for projected inflation for the current project programme	2	2	4		-	-	0	0	Mitigate	Project Co.	31/03/2016	1596	N
10.37	1 ; traffic management during construction (Health & Safety for site related traffic)		3	3	9		C	Project Co. will develop and implement a safe road management system	2	3	6		-	-	0	0	Avoid	Project Co.	31/03/2016	1596	N
10.38	2 ; Traffic management design within new hospital will cause disruption to service		2	4	8		C	Project Co. will design a safe working traffic management system to minimise any disruption to the functionality of the existing hospital buildings	2	3	6		-	-	0	0	Avoid	Project Co.	31/03/2016	1596	N
10.39	Aspiration of Architectural Design Scotland (and Planning Authority) may conflict with clinical operational needs - comments as of 02 June 2010		3	3	9			Early and positive engagement with A+DS	4	3	12		-	-	0	0	Mitigate	John Scott	31/03/2016	1596	N
10.40	Potential discovery of existing asbestos on the site or existing Pavilions to be demolished		4	4	16			Consideration to be given to carrying out a new type 2 asbestos survey and a type 3 asbestos survey will be carried out before any actual demolitions commence	2	4	8		-	-	0	0	Mitigate	Dan Doherty	31/03/2016	1596	N
~~10.41~~	~~Existing services infrastructure network around the entire Ayrshire Central hospital complex may require upgrading.~~				0			~~Agreed this risk is not a Project Construction risk and therefore transferred to the Board Operational risk reg~~			0		-	-	~~0~~	~~0~~				~~40864~~	~~X~~
10.42	Estimated cost of receiving detailed planning permission is incorrect, including cost of satisfying unforseen planning requirements	Project Co.											-	-			Mitigate	John Scott			

Appendix 3E

Design Statement

Project: North Ayrshire Community Hospital

The Design Statement

The Design Statement sets down NHS Ayrshire & Arran's aspirations for the project. The key criteria identified will be tested through the design assessment process at every stage of the business case and associated reports will be submitted as part of both the outline and full business case submissions.

Fundamental to the success of any healthcare project is the involvement of the facility users and other relevant stakeholders. In line with good practice, the design process has been focussed around engagement with user groups from as early a stage as possible. The design programme has been developed in close collaboration with NHS Ayrshire & Arran to allow appropriate periods for design development, presentation of proposals and evaluation and feedback.

The key design stages align the traditional RIBA Plan of Work and the Business Case driven requirements which are embodied within the Scheme Contract for the project under Frameworks Scotland. Each design stage requires acceptance and sign-off of proposals to enable a robust transition to the next design stage. There are a number of design iterations for each key level of design; 1:500 Departmental Relationships, 1:200 Room Relationships and 1:50 Equipment Layouts.

This OBC submission aligns with the 1:500 scale Departmental Relationship design and associated deliverables and is also effectively the conclusion of Stage C.

Early conceptual design work was based on the Clinical Brief and examined high level options for development of the preferred site to a target affordable floor area. The designs have been developed on an holistic basis with sustainability as a key driver. The requirement to achieve a BREEAM Healthcare excellent rating is integral to the business case process and a series of meetings has taken place to allocate responsibility for relevant credits and a pre-assessment process has been carried out by DSSR as the registered BREEAM assessor. This process will continue through the lifespan of the project up to post project evaluation. Sustainability is discussed in more detail in section 2 and post project evaluation is discussed further in section 6.11 of the Outline Business Case.

As part of the embedment of the design process in the various business case stages, the Scottish Government has, in addition to BREEAM assessments, advocated a formalised design process facilitated by Architecture and Design Scotland (A+DS) and Health Facilities Scotland (HFS) together with the application of AEDET (Achieving Excellence in Design Evaluation Toolkit) reviews. The design process facilitated by A+DS and HFS is new and the North Ayrshire Community Hospital is one of the pilot projects to roll out of this initiative. A Design Brief has been prepared by Core Associates and Lawrence McPherson Associates on behalf of NHS Ayrshire & Arran and is appended to this OBC.

Project: North Ayrshire Community Hospital

Design Statement

The current Ayrshire Community Hospital sits in a mature landscape setting and can be described as ‘a large stately home with pavilions behind, set in landscaped grounds’. It is the design intension that the mature landscape setting will form a core element in the design and use of the new facility and that the overall design concept replicates that of the existing site with a series of ‘therapy and recovery pods’, linked to promote connectivity and interaction between the building users, set in a flowing and suitably designed landscaped setting. The new facility must provide a new focal point to the healthcare element of the development whilst at the same time respect the hierarchy of the existing buildings and site context.

The new facility should integrate with the overall site and be separated from it by a suitably designed public space. This public space should be a central feature of the overall site masterplan and should form a buffer between the new facility and the remainder of the site. The facility should not be an iconic building but be of a more domestic scale and integrate with its landscape where ever possible. The facility should present a public face but also have secluded private secured external areas.

The new facility should integrate and have a direct relationship with the landscape, maximise the benefits of light and promote physical and visual interaction with the external landscape. The building should not be insular. The new facility must be patient focused to provide the best reassuring and therapeutic accommodation to aid recovery and rehabilitation. The new facility will be a modern community healthcare hub that has an aspiration of being a true community facility.

1. The Non-Negotiables for patients

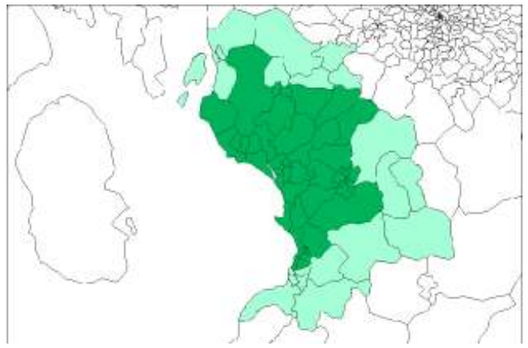
Benchmarks - Key criteria to be met and “what success might look like”

1.1 Location

The NHS Ayrshire and Arran healthcare strategy is based on a hub and spoke model that sees specialist centres supported by community hospitals which are in turn supported by a network of resource centres, health centres, community clinics and independent contractor premises.

The links between population, deprivation and mental health issues indicate that the highest demand for acute mental health inpatient admissions is from North Ayrshire, followed by East Ayrshire. The population projections also indicate a growing demand for older people’s acute inpatient mental health services, primarily from North Ayrshire.

Following an Option Appraisal review which looked at the potential location of this important new facility for North Ayrshire on a number of sites, the Preferred Option was selected. The diagram on the right indicates the importance of the site in Irvine at the existing Ayrshire Central Hospital.



The town is well served with transport links to the rest of Ayrshire and Central Scotland. The railway station is situated at the west end of the town centre and is on the mainline between Stranraer, Ayr and Glasgow. Irvine is also well served by several arterial roads, namely the A78 (Greenock to Prestwick), the A71 (Irvine to Kilmarnock and beyond to Edinburgh), the A737 (through the Garnock Valley to Glasgow International Airport and the A736 (to Barrhead and Govan).

The site requires to be easily accessible for patients.

Public transport connections should be available to link all relevant communities and associated healthcare facilities.

1.2 Accessibility

The site must have good public transport connections which includes integration of services from Irvine town centre and surrounding areas.

The development should facilitate provision of services, both specialised and routine, as close as possible to where services users are in need. Convenience of accessibility by public transport and the local road network for service users and their families and/or carers, staff and by emergency transport should be considered. Provision of adequate free parking should also be considered.

- Good public transport connections are required with drop-off and pick up points to be as close to the main entrance and exits as possible .
- There should be printed and electronic transport information available on site .
- There should be adequate designated car parking across the site with dedicated disabled provision close to the main entrance in accordance with statutory requirements. The car parking should be sympathetically landscaped with appropriate wayfinding and not reflect a “sea of car parking”.
- Clear and legible signage should be optimised to direct patients from out with the site through various levels to arrival at the part of the facility where they are to be treated.
- An appropriate landscape environment allowing for the prioritisation of the pedestrian around the site should be provided, for instance, clear separation of pedestrian, cycling and vehicle routes around the site.
- We will provide public cycle parking stands for use by patients/visitors.

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1. The Non-Negotiables for patients	Benchmarks - Key criteria to be met and “what success might look like”

1.3 Impression and Ethos
The impression of the facility must be welcoming and reassuring, but not attract undue attention. The entrance should be obvious to visitors but unobtrusive to passers-by.

On arrival the entrance must be clearly identified and recognisable. While part of community services, the facility should be on its own, secluded in landscaping and not part of the town fabric.

The building must feel welcoming, therapeutic, modern and efficient. It may look and feel more like a hotel than a hospital. The amount of natural light must be maximised at all times in order to improve mood, sleep and behaviour.

1.4 Organisation and wayfinding
Main entrance and car parking should be clearly identified with a clear signage.

Journeys and communication routes within the site must be safe, secure and pleasant, with clear visual signals (both in the form of the building, views out and the use of art) to provide identity and aid orientation and wayfinding.

- Design of organic assessment unit must be in line with dementia design audit.
- Public spaces should maximise the use of natural light
- Seating should be provided in corridors and public spaces at key locations for patients, staff and visitors
- Reception points should be located at building and department entrances and supported with signage at key decision points.
- The building should provide points of orientation through clarity of design with visual links between inside and outside.
- Individual patient areas should be clearly identified through use of colour and features including artwork and should be sensitive to separate groups needs such as dementia patients.
- Signage within the wards must be clear and functional and ensure way finding.

1.5 Patient experience
Accommodation must be arranged such that i) patient groupings are of a reasonable social scale and ii) segregation by gender is readily managed. There should be no more restrictions on a person’s freedom than is warranted by his or her clinical condition.

The overall design should provide a safe service for all, patients, carers, visitors and staff.

When and where appropriate, patients must be able to access a choice of environments; giving the option of the privacy of one’s own room, a social communal space, and external garden space.

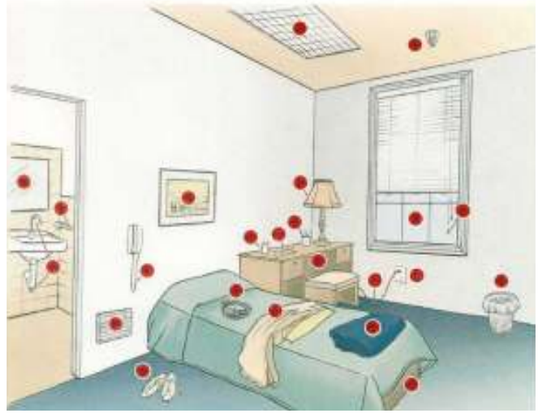
- Reception areas should be comfortable welcoming and attractive.
- Long dark corridors and unwelcoming reception areas must be avoided.
- Day areas, including open-plan and smaller sitting areas retain an impression of light and space.
- Individual patient areas should be clearly identified through use of colour and features including artwork and should be sensitive to separate group needs such as dementia patients.
- Entrance to wards must maintain the dignity and privacy of acutely unwell patients.
- Inpatient accommodation to be divided into units of not more than 15 patients.
- Each unit must be capable of segregating the sexes both inside and, where possible, within garden areas.
- The living accommodation must give access to inherently secure external garden spaces.

Design Statement

1. The Non-Negotiables for patients	Benchmarks - Key criteria to be met and “what success might look like”

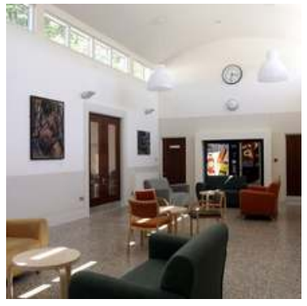
1.6 Patient safety
The overall design and layout of all areas should aim to reduce the risk of harm to patients and staff.

The mix of patient groups will require careful consideration in design of safe and secure areas throughout the building and allowing interaction between patient groups, staff and visitors where appropriate.



- Ligature points being avoided in all clinical/common areas through the selection of fittings and materials that reduce risk
- Lighting shall be provided in a manner that enhances the quality of the accommodation contributing to a relaxed and domestic character, thus avoiding an institutional atmosphere. Where appropriate lighting of a domestic character shall be installed. (All luminaries shall be low energy, efficient type).
- There must be safe storage facilities within bedrooms for personal belongings.
- The environment should make the patient feel more safe, if a patient feels uncomfortable they should be able to freely move to another area

1.7 Needs of different patient groups
For some patients such as those in - Rehabilitation, Non Acute, Low Secure wards - a stay in the hospital could be for a number of months or years and as such the environment of these areas should contrast significantly from acute clinical environments. These wards must comply with health & safety and infection control but have a sense of homeliness.



- Designated smoking areas will be determined by national and local policy.
- Garden areas should provide colours of plants and sensory stimulation, sheltered areas, suntraps and comfortable seating
- Bedroom areas should enhance the therapeutic experience and also provide privacy
- Dining facilities that enhance the meal experience
- Clinical areas that are non threatening and welcoming;
- Common sitting and activity areas should be homely and domestic while lending themselves to recovery

1.8 Therapeutic environment
Consideration should be given to alleviating fear and anxiety, maximizing security and safety, reducing boredom and creating a healing environment with the need for artwork, legibility, daylight and views etc also a consideration.

Care should be provided in an environment that will maximise benefit to the individuals to aid their health and well being. This includes the design and functionality of the building along with a wider consideration of the location of the service and the environment in which it is located. Recognition should be given to the therapeutic benefit of outside recreational facilities and natural space.

- Calming features built into the fabric of the building.
- Artwork integral to the building and external areas
- Integration of patient participation art programmes into building
- Appropriate use of colour and texture to key areas.

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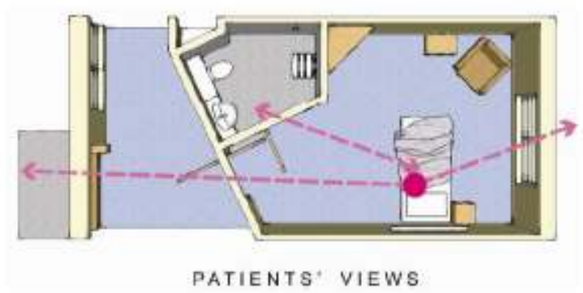
Design Statement

1. The Non-Negotiables for patients - Patient Environment—The key spaces that are fundamental to the patient's experience on a daily basis

1.9 Bedrooms
Single bedrooms with en-suite facilities will be provided to all in-patient areas:

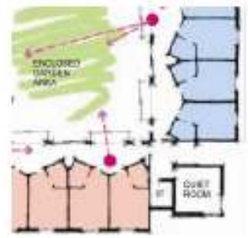
Personalisation of space is important and patients should be fully involved in the design process.

The bedroom should allow easy access to public spaces.



- The view from the room must allow a view of landscape and/or interesting scene or activity but not allow others to view directly into the room.
- Daylighting - bedrooms must be placed and orientated to maximise the use of available light.
- Only those who need to should have access to bedrooms areas





1.10 Communal and Social
Socialisation space is a key component of all ward areas although it is noted that the preferred layout/ configuration of this space varies considerably by clinical area.

To ensure future medium/long term flexibility it is important that the design of all clinical areas facilitates a model whereby socialisation space can be used flexibly to meet the specific requirements of different patient groups whilst maintaining an optimal relationship with bedroom and support accommodation.


- Provision of daylight and views (inc. long views beyond any courtyard) and control over ones environment.
- Demonstration of inclusive Design – both from physical disability and dementia friendly perspective

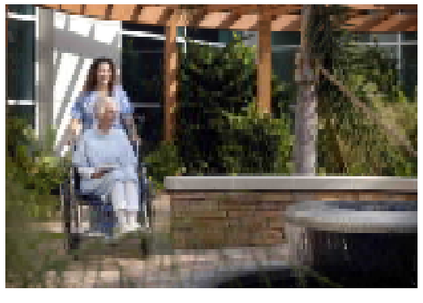


1.11External spaces
Outside space should be accessible from individual wards and should include social and recreation areas appropriate to patient groups together with green space.

Outdoor space should be accessible to people with limited mobility and/or sensory impairment.

Outdoor spaces should not be overlooked inappropriately or give the impression of being confined or cramped.

Outside areas must be safe and secure with risks completely minimised in order to enhance the experience of service users.




Design Statement

2. The Non-Negotiables for staff	Benchmarks - Key criteria to be met and “what success might look like”

2.1 Location
Many staff who have historically worked on the site will continue to do so. Staff associated with the new services on site will be coming from further afield but for all it is important that the links within the NHS Ayrshire and Arran models of healthcare delivery are reinforced to ensure the success of the new facility.

- Linkages to other associated sites and services are maintained and reinforced
- The combination of new staff and those more familiar with the site should have facilities suitable for fuller integration— shared social spaces, meeting rooms, etc.

2.2 Accessibility
The facility must be accessible for staff. The transport strategy and provision must be built around need and to encourage the majority of staff on standardised hours to contribute to the achievement of the green travel plan. Dedicated staff parking should be provided to meet priority needs only.

- The bus stop should be as close to the staff entrance as possible.
- Essential users (such as peripatetic staff) parking: 50m max to car park spaces from staff entrance.
- Staff parking should be provided within close walking distance from staff entrance, via well lit and observed route.
- We will provide secure cycle parking for staff, along with public cycle parking stands for use by patients/visitors.

2.3 An integrated facility
The benefits of co-location of the services must be enabled and encouraged by the facility

The development should promote integration within the Mental Health service, with other NHS services and with partner agencies. This should improve access to physical health services for patients and enable better working relationships between staff groups.

- Spaces for impromptu conversations
- Realising economies of scale and benefit through shared services and treatment areas and demonstration of efficient use of rooms and spaces for multi functional and joint uses.

2.4 Suitable place of work and functional compliance
The facility must be an attractive place to work, providing up to date facilities to attract and maintain the calibre of staff required.

The development should facilitate both retention and recruitment of high calibre staff both now and in the future. This should consider rotas, training and accreditation.

Design of the physical environment is integral to the delivery of effective care and treatment: the environment is part of the treatment, and care should be taken with intervisibility (safety), freedom (level of staffing), and the therapeutic quality of the building within its landscaped setting to support an overall philosophy of recovery and social inclusion.

Design Statement

2. The Non-Negotiables for staff	Benchmarks - Key criteria to be met and “what success might look like”

2.5 Human needs
The facility must be self-sufficient in terms of staff amenities with catering, shower, changing and locker facilities, internal and external respite areas segregated from patient areas, and the opportunity for physical exercise



- Strategic location of staff shower, changing and locker facilities.
- Amenity areas within 3 minute walking distance of all departments
- Sufficient staff WCs and showers separated from patient facilities
- External links to local shops
- Ward staff should have access to an area within the ward with provision of personal belongings lockers for safe storage of personal belongings.
- There must be access to changing facilities.

2.6 HAI
The design must support staff in their working practices to address Healthcare Associated Infections.


- HAI-Scribe assessment process to be used.
- HAI-Scribe (Healthcare Associated Infection System for Controlling Risk in the built environment) assessment process should be used to ensure the engagement and collaboration and experience from a wide range of healthcare experts, ensuring that key personnel are involved in reducing risk.
- The use of HAI-Scribe should maintain a safe healthcare environment and should minimise the risk of HAI through assessment and planning, prior to and during, new build and renovation projects. It should also be applicable during ongoing maintenance of the healthcare facility.
- Every effort must be taken to acknowledge and ultimately reduce healthcare associated infections.

2.7 Flexibility in use
Flexibility must be built into the accommodation to respond to challenges thrown up by changes in the patient group, new and emerging models of care in response to changes in policy, legislation and evolution of evidence based practice.

Common spaces should be flexible in design to ensure alternative usage in the future.


- Support areas such as therapy rooms will be provided in a central location to allow the shared use of resources and economies of benefit from the co-location.

2.8 Maintainability
The building must be easy and cost effective to clean and maintain.

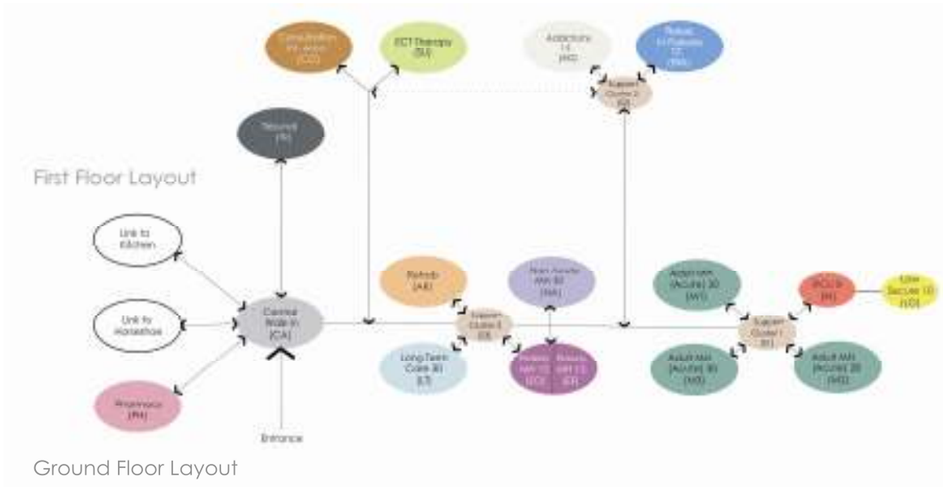

- The building must be durable enough to cope with the demands of this patient group, with robust impact resistant materials.
- It must be possible for M&E systems to be serviced without service personnel entering the patient area.
- Use of wall and door protection throughout vulnerable areas.
- FM routes which are as short and direct as possible to minimise trolleys, etc being moved through large areas of the building.

Design Statement

2. The Non-Negotiables for staff	Benchmarks - Key criteria to be met and “what success might look like”

2.9 Impression and Ethos
The impression of the facility must be welcoming and reassuring, but not attract undue attention. The entrance should be obvious to visitors but unobtrusive to passers-by.

The facility requires to create the optimal relationship between new and retained facilities and is seen as a key design challenge associated with this project. Specifically, the whole facility must be seen and operate as a cohesive unit, with appropriate links identified with existing facilities as represented in the massing diagram indicated on the right. The building must feel welcoming, therapeutic, modern and efficient. It may look and feel more like a hotel than a hospital. The amount of natural light must be maximised at all times in order to improve mood, sleep and behaviour.



2.10 Organisation and wayfinding
The site organisation should reflect the interdependencies of the retained estate and the new facilities, with strategically located access routes, car parking and service routes which should be clearly identified with a clear hierarchy of signage.

Journeys within the site must be safe, secure and pleasant, with clear visual signals (both in the form of the building, views out and the use of art) to provide identity and aid orientation and wayfinding.

2.11 Staff experience
Great care, great support, great experience and health-gain in the new development must be supported by suitable infrastructure that minimises the constraints to the care offered.

The design must provide a safe environment for staff. Any clinical risks associated with the development should be assessed, managed and minimised so that the provision of the service should do no harm and aim to avoid preventable adverse events.

- Reception areas should be comfortable welcoming and attractive.
- Long dark corridors and unwelcoming reception areas must be avoided.
- Each unit should be capable of segregating the sexes both inside and, where possible, within garden areas.
- Individual patient areas should be clearly identified through use of colour and features including artwork and should be sensitive to separate groups needs such as dementia patients.
- Entrance to wards must maintain the dignity and privacy of acutely unwell patients.

Design Statement

3. The Non-Negotiables for Public/Visitors/Carers/Relatives	Benchmarks - Key criteria to be met and “what success

3.1 Accessible
The building should be easily accessible from the patient catchment area with both good public transport links and good on site parking close to main entrance areas.

- Well positioned bus stops and taxi / car drop off points.
- Adequate and easily identifiable parking and including disabled spaces at main entrance in line with statutory requirements.
- Parking within close proximity to main entrance (s)
- Well lit pedestrian routes around the building and between main entrance(s), car parking, bus stop(s), cycle parking and taxi pick up points
- We will provide public cycle parking stands for use by patients/visitors

3.2 Welcoming and reassuring
Waiting areas must be calm, comfortable, safe and secure environments with minimised hazards and potential risks. They must relate to reception points which afford ease of orientation to other areas of the building, Use of glazed screens and large windows to external areas will enable easier familiarity with location within the building.

3.3 Ease of Orientation
The building should be legible in layout with ease of access to obvious reception points which are integral to the overall site wayfinding strategy**.**

Links from public transport, car parking and drop off points should be close to the main entrance.

3.4 Amenity
There should be a café area for use by both patients and visitors together, with access to facilities for children’s play, and to an external garden space. Visitors and patients should be able to go on short walks with plenty of space to stop and rest.

Reception points throughout the building should afford ease of access to support spaces for interviews with staff and meetings with relatives and friends.

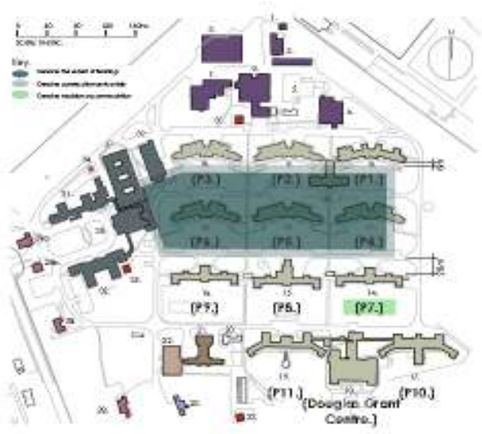
The overall design and layout of visitor areas should aim to reduce the risk of harm to those accompanying patients. Visitors need to feel relaxed in a safe and secure environment.

Design Statement

4. Alignment of Investment with Policy	Benchmarks - Key criteria to be met and “what success might look like”

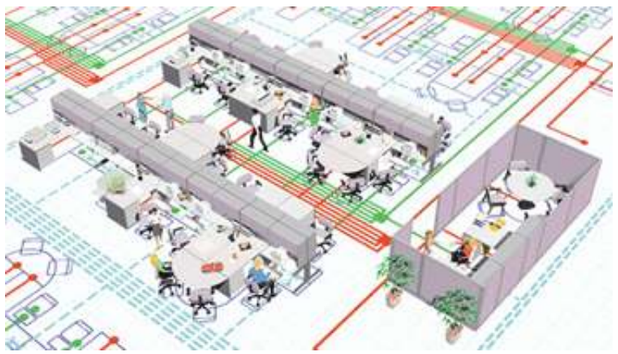
4.1 Local Need
The provision of the new North Ayrshire Community Hospital represents a significant public investment and must therefore contribute to the achievement of the 5 strategic outcomes in relation to the population of the area.

- Is considered to be a good neighbour
- Reinforce that the Ayrshire Central Hospital site remains a strategic priority for NHS Ayrshire and Arran
- Contributes to employment of the local population
- Is sustainable and offers long term flexibility in use and future development options
- Offers support to the local community and is, as far as possible, an open and fully inclusive facility for the local population.
- Creating the optimal relationship between new and retained facilities



4.2 Future Flexibility and Expansion.
To allow for new and altered facilities that cannot be developed within the existing envelope, the building should be capable of expansion without compromising the defined non negotiables – that means it should not occupy the whole of its site at the outset.

Future flexibility of all accommodation and, in particular, the ability of new spaces to be easily changed with time with regards to boundaries, layouts, patient groups using and clinical models employed is paramount.



- The inpatient wards – although specific in function and elements of configuration - will, as far as possible, comprise core generic elements in order that they may flex optimally over time. This flexibility is required in order to respond to clinical and demographic changes in the patient population without the need for major re-configuration. One key manifestation of this flexibility will be a design that allows individual ward boundaries to change in the future if required.
- There should be some room for expansion on site if required, primarily, the building should be constructed in such a way that there is flexibility to nurse patients with varying needs between wards if bed number pressures arise.

4.3 Sustainability
The facility should be developed and maintained in line with the Scottish Government and NHS Scotlands objectives for sustainability and as captured in the NHS Ayrshire and Arran Sustainability documentation.

- The building will achieve BREEAM Health excellent
- The design and construction of the facility will contribute to NHS Ayrshire and Arran’s commitments in terms of – Good Corporate Citizen Assessment Model.

Project: North Ayrshire Community Hospital

Design Statement

5. References — Benchmarks - Key criteria to be met and “what success might look like”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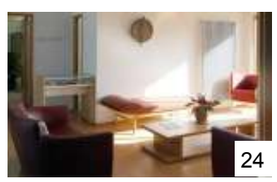
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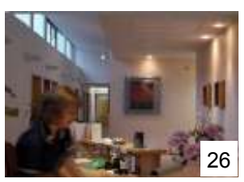
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5. References

Benchmarks - Key criteria to be met and “what success might look like”


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33. Bluestone Mental Health Unit, Craigavon Area Hospital, Northern Ireland by David Morley Architects. Stock photo
34. Bluestone Mental Health Unit, Craigavon Area Hospital, Northern Ireland by David Morley Architects. Stock photo
35. Girvan Community Hospital by Austin-Smith Lord Architects. http://www.healthierplaces.org/healthierplaces/image/154-girvan-community-hospital/1
36. Dumfries Dental Centre by Archial Architects. http://www.healthierplaces.org/healthierplaces/image/122-dumfries-dental-centre/2
37. Pulross Intermediate Healthcare Centre, South London by Penoyre & Prasad. http://www.penoyre-prasad.net
38. Woodhaven Mental Health Unit by Broadway Malyan. http://www.broadwaymalyan.com/project/skills/healthcare/woodhaven-mhu
39. Stratheden 18 Bed Dementia & MHU, Fife by Richard Murphy Architects. http://www.richardmurphyarchitects.com/projects/453/
40. Kentish Town Health Centre by Alford Hall Monaghan Morris Architects (AHMM). http://www.ahmm.co.uk/projects/done/done_kentish_town_care_centre.php
41. Stratheden 18 Bed Dementia & MHU, Fife by Richard Murphy Architects. http://www.richardmurphyarchitects.com/projects/453/
42. Stratheden 18 Bed Dementia & MHU, Fife by Richard Murphy Architects. http://www.richardmurphyarchitects.com/projects/453/
43. Maggie’s Cancer Caring Centre, London by Rogers Stirk Harbour and Partners. http://www.healthierplaces.org/healthierplaces/image/192-maggie-rsquo-s-cancer-caring-centre-london/2
44. Woodhaven Mental Health Unit by Broadway Malyan. http://www.broadwaymalyan.com/project/skills/healthcare/woodhaven-mhu
45. Ayrshire Central Hospital, Girvan by Lawrence McPherson Architects. Stock Photo
46. Girvan Community Hospital by Austin-Smith Lord Architects. Stock Photo

Design Statement

5. Self Assessment Process

Decision Point	Authority of decision	Additional skills or other perspectives	How the above criteria will be considered at this stage and/or valued in the decision	Information needed to allow evaluation
Site Selection	Decision by NHS Ayrshire & Arran with advice from Capital Planning Steering Group	Comment to be sought from the Mental Health Programme Board. To inform Board's consideration.	Extensive Option appraisal to be undertaken to ensure the most appropriate site location is proposed. Option Appraisal to include robust model development process including, identify, measure and value benefits, group weight criteria and benefits scoring.	A long list of options proposed, short list to be scored. Cost estimates included discounting and both capital and revenue expenditure. Decision analysis should be undertaken to include base case and sensitivity analysis.
Selection of Delivery/Design Team (PSCP Initial Appointment)	Decision by NHS Ayrshire & Arran Directors	Implementation Advisor external to the Project Team	Potential to deliver quality of the end project in terms of the criteria Compliance with service standards	At interview, a section of presentation and questioning to be on design approach and potential of the team to deliver on the above criteria.
Issue of clinical model/NHS brief	Decision by North Ayrshire Locality Programme Board with advice from Project Manager	Healthcare Planner external to the Project		
Selection of early design concept from options developed	Decision by North Ayrshire Locality Programme Board with advice from the Steering Group and Design user group members	Healthcare Planner and Design advisor external to the project team	Assessment of the options, using AEDET and other methodology, to evaluate the likelihood of the options delivering a development that meets the criteria.	
Approval of design proposals to be submitted to North Ayrshire Council (planning authority)	Decision by NHS Ayrshire & Arran Board with advice from North Ayrshire Locality Programme Board, Steering Group and Design user group members		Assessment of options, using AEDET or other methodology, to evaluate the likelihood of the options delivering a development that meets the criteria above.	
Approval of detailed design proposals to allow construction	Decision by North Ayrshire Locality Programme Board with advice from Steering Group and Design user group members		Assessment of options, using AEDET or other methodology, to evaluate the likelihood of the options delivering a development that meets the criteria above.	
Post Project and Post Occupancy Evaluations	Consideration by NHS Ayrshire & Arran Board—lessons fed to SGHD	Advisors external to project team	Assessment of completed development by representatives of the stakeholder groups involved in establishing the above against the goals they set.	

Appendix 3F

Stage C Design Extract
(Exemplar Design)

North Ayrshire Community Hospital

Outline Business Case
Exemplar Design

Stage C Report

Revision A

11 January 2011

BUCHAN ASSOCIATES LTD

Core Associates
Architects and Design Consultants

Section 1:

1.0 Introduction

1.1 Design development Process

1.0 Introduction

This RIBA Work Stage C Design Report has been prepared and includes detail on the design process, design features and descriptions of the design of each of the departments together with relevant illustrations.

This section has been prepared to provide an overview of the architectural strategy for the proposed New North Ayrshire Community Hospital Outline Business Case submission by NHS Ayrshire and Arran. It should be read in conjunction with all other design strategy documents contained within this report.

The M+E and Civil + Structural Engineers who were involved in the project during earlier stages - DSSR and URS Scott Wilson respectively – have been appointed through Core Associates to refresh work previously done and to ensure relevant compliance with overall engineering requirements, including wider site infrastructure such as drainage, roads and utilities are identified through design strategies.

Due to the proposed procurement of the project being via the NPD route, the original intent for the Exemplar Design was that it would be developed to RIBA Design Stage C+ only to function as a basic demonstration that the brief could be successfully delivered as a facility and that it would form the basis for initial thoughts on design by alternative bidders and such designs to then be developed by them throughout the competitive dialogue process.

The Exemplar Design has now effectively been developed beyond Stage C to more fully demonstrate compliance with the brief and the real potential to deliver the project within the briefed area requirements. The process has involved the development of the design to effectively room relationship (1:200 scale) level and including alternative solutions for ward design together with an associated review of additional area implications via building envelope design.

This information is all included within this Stage C Design Report and should be made available to shortlisted bidders.

Much of this design development has been done with the involvement of the relevant project stakeholders through the consultation process which was set down in the programme for the development of the Exemplar Design.

The Exemplar Design was developed from the standpoint of a team well conversant in the briefed requirement and with the benefit of longer term experience of the project in its previous gestation. Key building blocks such as the single bedroom and en-suite design (which had previously been agreed with user groups) for example were utilized at all stages in the development of the Exemplar Design.

AERIAL VIEW FROM SOUTH

The design developed was reviewed and approved in the context of all relevant national and local briefing documentation and in line with an agreed design programme that identified key requirements and relevant outputs together with an integral approval process and "sign off" at all appropriate stages, thereby ensuring that it has the support of all relevant project stakeholders.

The design and associated consultation process had to be particularly focused to achieve sign-off within a very short timescale and therefore there had to be stakeholder buy – in to achieve tangible results at every consultation and design intervention point.

In the first design meeting there was the opportunity to offer a blank canvas approach to the development of a new design by offering the stakeholders the opportunity to participate in a departmental relationship block planning exercise and with the perspective of key site constraints and opportunities. This meeting achieved an understanding of what key adjacencies should be both horizontally and vertically.

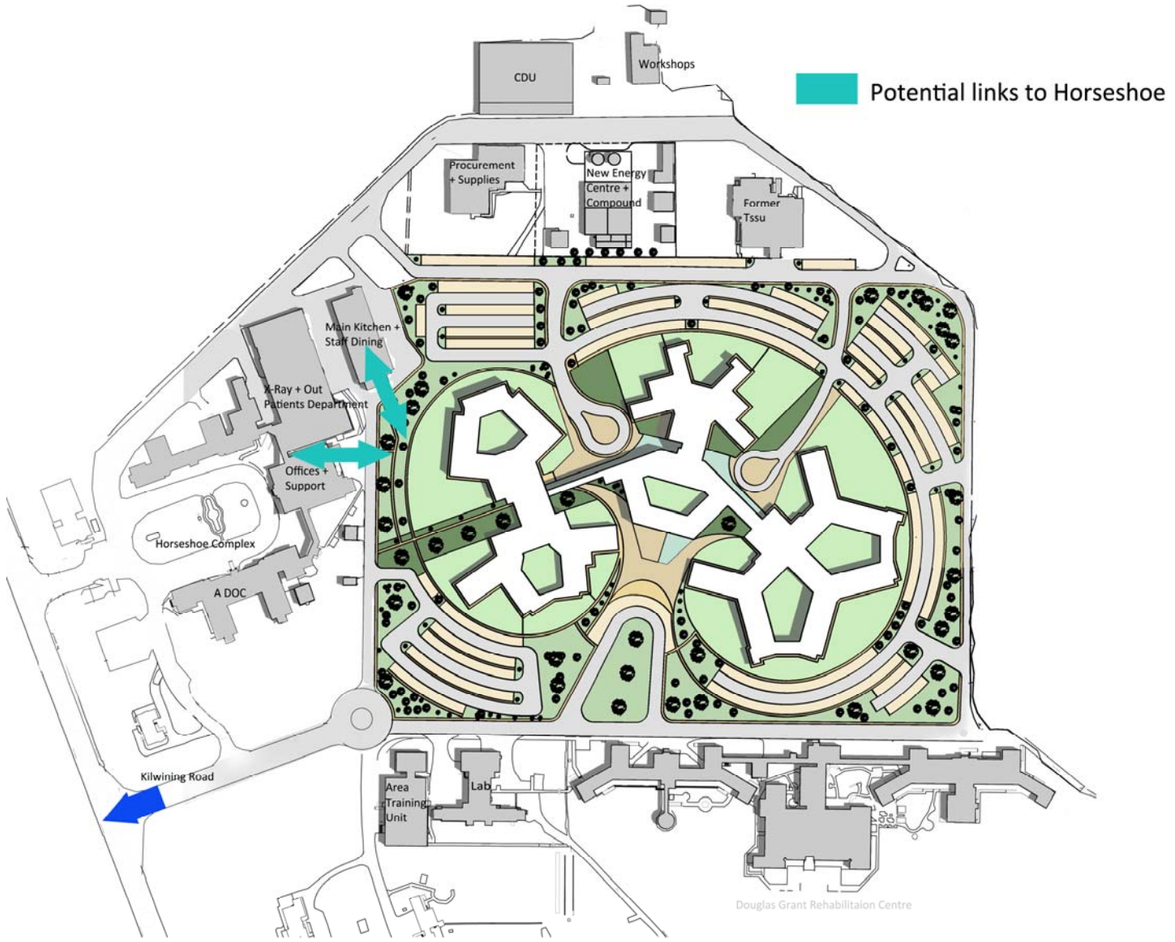
The second design meeting was used as the platform to illustrate the key options which had been developed in more detail with the feedback from meeting no.1 and also strategic options for ward design.

A preferred way forwards was agreed at meeting no. 2 and the design was further progressed for presentation at meeting number 3.

A preferred option was agreed, subject to some further refinement, at meeting no. 3 and this was taken forwards to sign-off at meeting no. 4.

The design was also subject to Architecture and Design Scotland (A+DS) review and SFT design review prior to the OBC submission being made. A+DS, through Health Facilities Scotland have endorsed the design as supported with a number of recommendations for further design focus and development through subsequent stages of the project. This report and recommendations are described in more detail in Section 3.16.

An SFT design review was also carried out in December 2011 and the report has not been included within this Stage C report, but there is commentary on any aspects which were discussed during the review which impact on either the Exemplar Design or more detailed design development within the summary to this report.



PROPOSED SITE PLAN

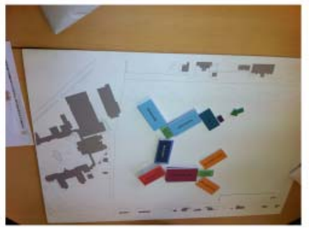
1.1 Design Development Process

The process adopted for the development of the design had to ensure that all the valuable work previously done in respect of the New North Ayrshire Community Hospital project was assessed in the context of the Design Exemplar. The approach had to be robust to achieve an effective and fully endorsed design within a relatively short timescale.

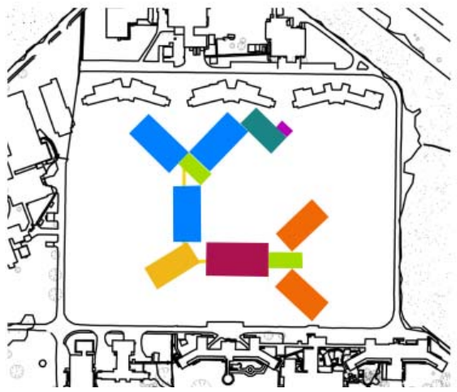
The key issues which were identified to help effect the process were:

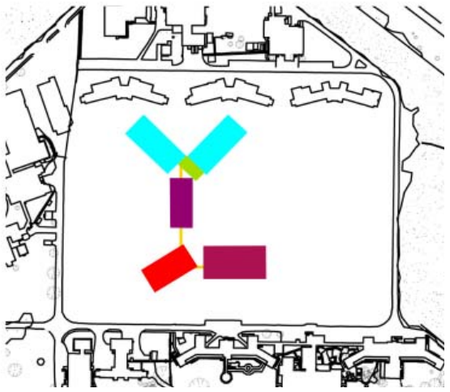
- Continuity of approach—Design team with familiarity of the project and the work previously done to be engaged to work as part of Buchan + Associates Supply Chain under the Frameworks Scotland Healthcare Planner PSC Framework.
- Understanding of the briefed requirement - the embedment of the design team with the Healthcare Planner ensured that the translation of the revised brief and associated requirements into tangible design solutions was as seamless as possible.
- Work to an agreed programme of activities, including user group meetings.
- Set the framework for the user interface meetings and associated activities to assist collective understanding of relevant inputs and outputs required to achieve success.
- Include all relevant stakeholder groups within the user consultation process and maximise collective commentary and decision making in the design development process.
- Take a “clean sheet “ approach at the commencement of stakeholder interfaces to maximise the potential of new approaches to use of the site and key linkages, departmental relationships—both horizontal and vertical and changes to the brief and decant strategy to effect a more compact hospital configuration on the site.
- Look at the site analytically with the stakeholders groups to build and understanding of the various constraints and opportunities and how these can be translated in the developing design.
- Use presentation tools and techniques which help build collective understanding of all the key aspects to be considered in the development of the design.
- Make the process involving and as interactive as possible to achieve the agreement of a preferred option which demonstrates: the optimum departmental relationships; good flows for staff, patients, visitors and FM throughout the building; good orientation on site and connectivity to all other parts of the retained estate where required; sits on site contextually with the historic Horseshoe development and key landscape elements.
- Ensure the project is in line with the wider aims and objectives of NHS Ayrshire and Arran’s Design statement.

FIRST USER GROUP WORKSHOP



BLOCK PLAN OPTIONS—PREFERRED ADJACENCIES





Section 2:

2.0 Site Context

2.1 Site Context

2,2 Site Analysis

2.0 Site Context

2.1 Location

Irvine is a coastal town on the Firth of Clyde located approximately 25 miles south west of Glasgow. With a population of approximately 40,000 it is the largest settlement in North Ayrshire.

The town is well served with transport links to the rest of Ayrshire and also Central Scotland.

The railway station is situated at the west end of the town centre and is on the mainline between Stranraer, Ayr and Glasgow. Irvine is also well served by several arterial roads, namely the A78 (Greenock to Prestwick), the A71 (Irvine to Kilmarnock and beyond to Edinburgh), the A737 (through the Garnock Valley to Glasgow International Airport and the A736 (to Barrhead and Govan).

2.2 Site

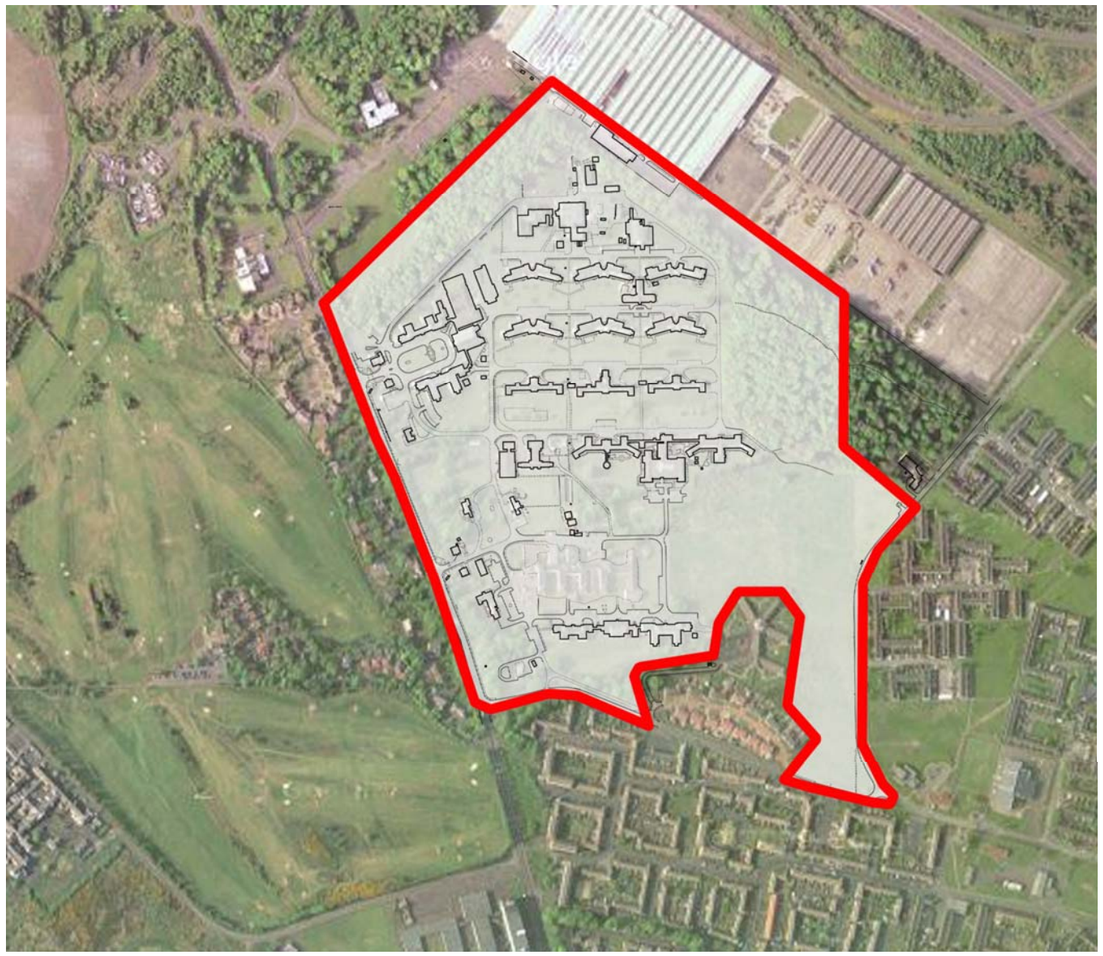
The Ayrshire Central Hospital site is located at the northern edge of the urban area of Irvine to the east of Kilwinning Road (A737) the main arterial route between the town centre and the A78 (Trunk Road). Bordered by Kilwinning Road to the west, Castlepark Circus to the east, Castlepark Road/Ravenspark to the south, and the former Volvo assembly plant to the North East.

The existing Kilwinning Road hospital site extends to approximately 40 hectares (100 acres) and is located towards the northern boundary of Irvine to the south and south west of the Eglinton Interchange on the A78.

Ayrshire Central Hospital dates back to 1939 and was built as a `fever hospital' as well as providing inpatient maternity services. At the north end of the site is `The Horseshoe' and to the south lies the former nurses home—all of which are Category B Listed.

The proposed new hospital will be built as part of a more holistic masterplanned approach for the overall 40 hectare (100 acres) site and this will result in the retention of certain existing healthcare buildings.

The new hospital will be located within the constraints imposed by the existing buildings to be retained on site.



SITE CONTEXT

2.2 Site Analysis

A thorough site analysis was carried out for the site looking at the various constraints and opportunities and including the local climate data, site history, traffic routes, servicing, retained estate and including drainage and other site infrastructure features.

More detailed studies looking at the site in respect of the detail of landscape, animal habitats and wider traffic implications are effectively in progress and will be concluded at the next stage of project development.

CLIMATE

Ayrshire Central Hospital site is constructed on land which was formerly part of the southern portions of the Eglinton Castle Estate.

The hospital was primarily designed for use as a Fevers and Contagious Diseases facility and was originally built by Ayr County Council from 1936. It was opened in stages from 1941 and became fully operational by 1945.

It was designed and built to replace various other small infectious diseases hospitals which had facilities that were deemed to be inadequate. A Modern-style architecture was adopted in order to convey a sense of great advancement in medical science and an assurance that the best and most current hospital care was available within.

The original hospital buildings were constructed as a series of Pavilions. The former Maternity and Neonatal Services building was set in the south of the site and to that side of the Red Burn and is currently mothballed.

The Pavilions located to the north of the Red Burn were originally dedicated to the treatment of Fevers, Polio and Outpatients.

The hospital transferred to the control of the National Health Service in 1948.

The Horseshoe which is the courtyard group at the North West end of the site is Category B Listed (from December 1992) and comprises 3 blocks in a U-plan arrangement . The listing excludes the Out-patient Department extension. The Horseshoe has a number of interesting architectural features including projecting stair turrets, deeply projecting outer wings, ground floor arcade in the centre and original fire escapes on the end walls of wings.

The existing Gatehouses fronting Kilwinning Road are also covered by the same Listing as the main Horseshoe blocks.

LISTED BUILDINGS

The site, situated just off a main road, the A737, is well served by both local and regional transport links.

The railway is situated in the west end of the town centre and is easily accessible from the hospital. There are frequent bus services provided by Western Buses and Stagecoach.

The main access point for the hospital is on Kilwinning Road, near the North of the site. This entrance is announced by a pair of lodges sitting on either side of the road facing each other.

Further South on Kilwinning Road there is another entrance identified in the same manner. Within the site there is a main circulation route running the perimeter of the various pavilions. Within this perimeter there are a series of secondary circulation routes running throughout the pavilions allowing both vehicular and pedestrian access.

There are a number of footpaths running throughout the site, some being unofficial desire tracks connecting the different pavilion wards.

Site boundary

Main circulation route

Secondary circulation route

Footpaths

Castlepark road

A737 Kilwinning road

ACCESS and VEHICULAR MOVEMENT

Decant and Phasing

The decant and phasing strategy for the project has undergone much development due to the complexity of continuing to cater for a diverse range of clinical services which are currently provided from the pavilion complex on site.

In order to maximise the potential for the new development the decant strategy has been developed to allow for the maximum area of conjoined site to be made available at the start of the construction phase of the project.

There are nine separate pavilions which effectively have to be demolished to facilitate the full redevelopment of the proposed site located behind the Horseshoe buildings.

The current strategy has Pavilions 1,2 and 3 to remain until build completion and the services provided in these pavilions—Elderly Mental Health and Geriatric Rehabilitation—will then be moved to the new build.

It is essential that the phasing of proposed construction works together with a suitable stand-off distance from the pavilions is maintained to minimise any potential disturbance to ongoing clinical care.

Pavilions 4 – 9 will all be demolished pre construction. As a result, services provided in these buildings will need to be allocated new space. The remaining buildings around the site are all to be retained with the reconfiguration of the Horseshoe enabling crucial services to be retained on site during construction works.

The contractor for the works will be responsible for ensuring that the phasing of the works together with site segregation allows for the ongoing use of the retained estate inclusive of maintenance and daily service access requirements.

Buildings remaining on site

Area to be cleared post build

Potential development site

Woodland area

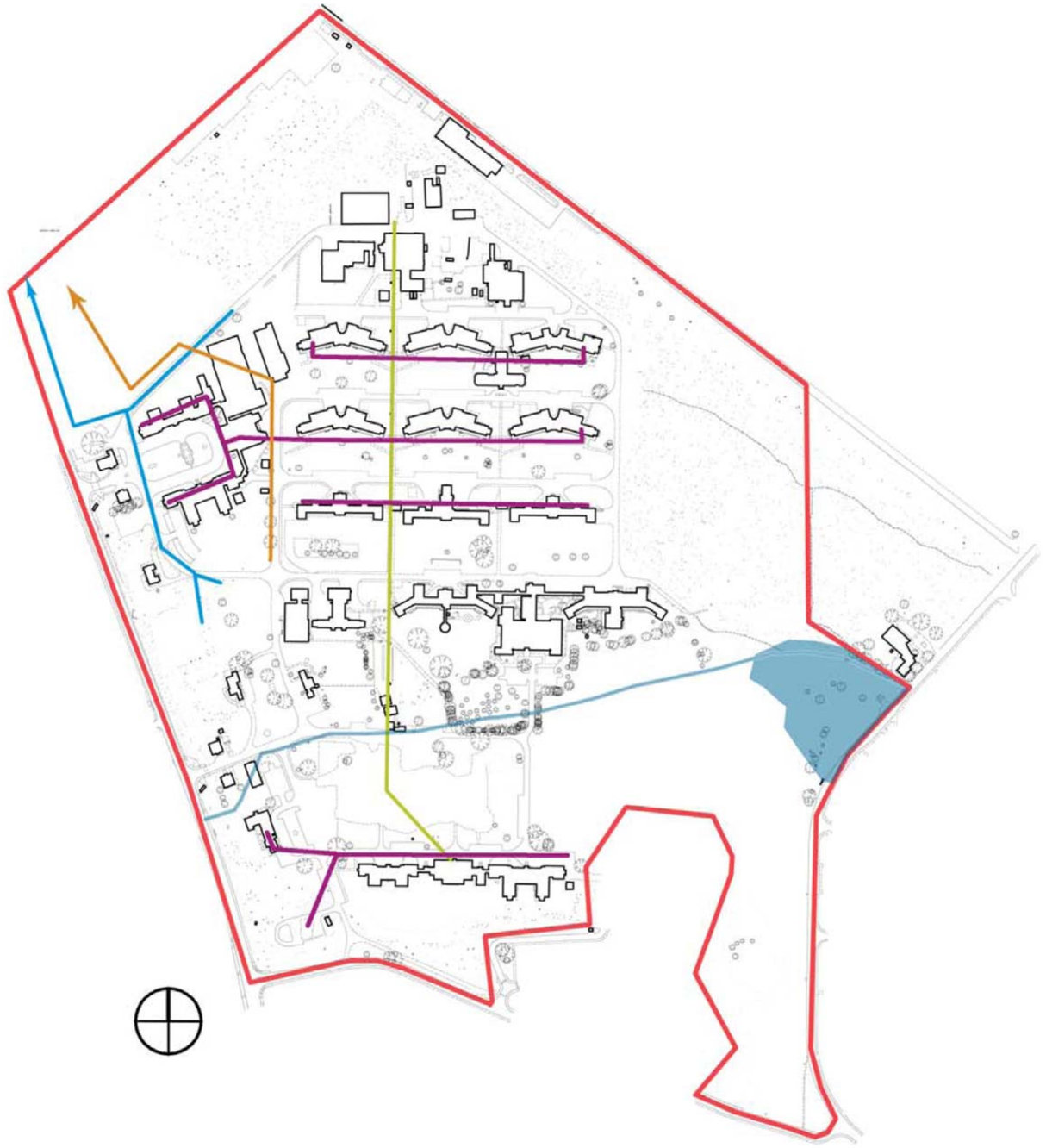
DECANT AND PHASING

Site utilities are spread throughout the site by a complex network of pre-formed trenches. The trenches vary in depth, with some of the largest being 1200mm deep.

The trenches carry mainly electricity, heating and data/communication services.

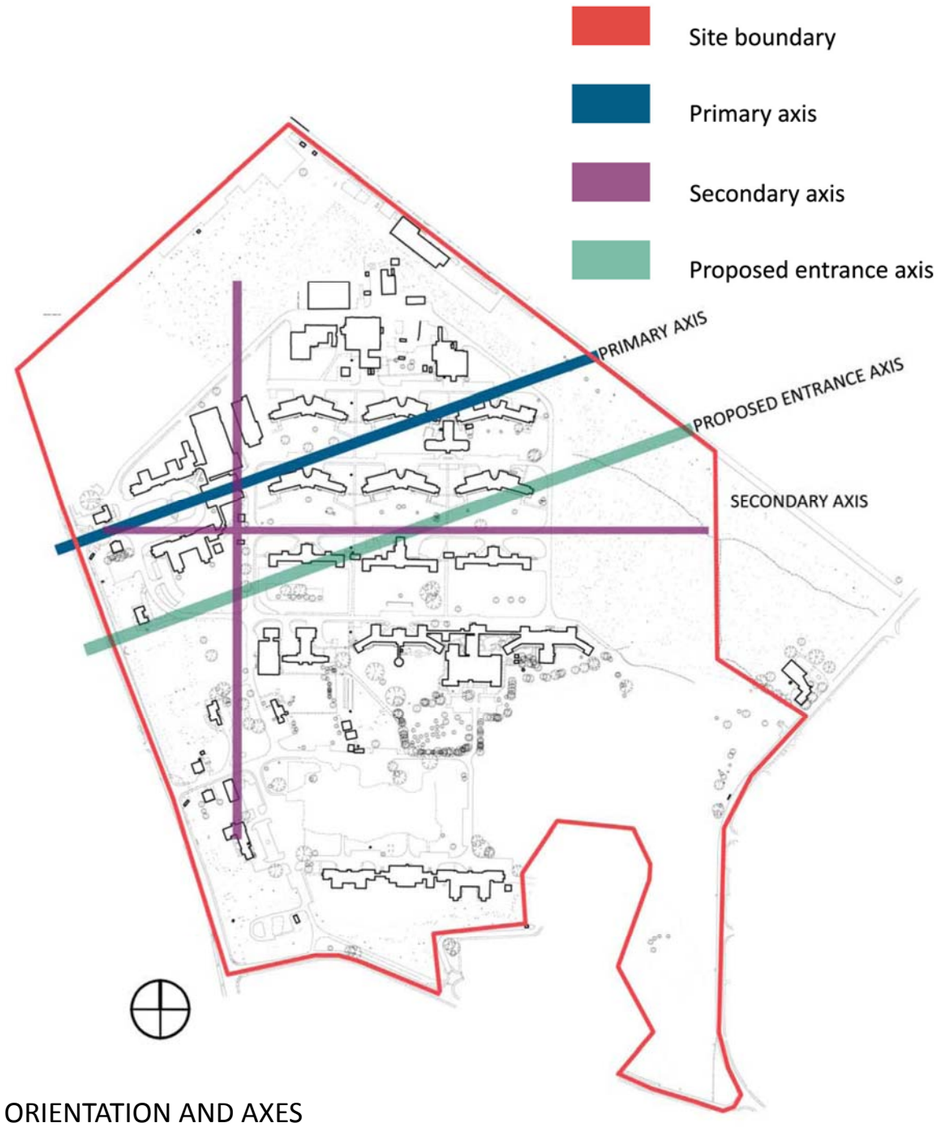
The main arterial routes are supplemented by numerous smaller service ducts, many of which cannot be determined until further investigations have taken place.

Fuller information is included in DSSR layouts and with supplementary information relating to site survey and investigation works carried out.



Currently the primary axis of the site runs through the first main access point. It has been primarily dictated by the 'horseshoe' arrangement of buildings at the entrance to the site, creating a circulation loop inside them.

The proposed new main entrance vehicular axis lies on the same orientation but is situated further to the south on site



ORIENTATION AND AXES

There is great potential on this site to maximise the use of the woodland areas surrounding the North and East sides of the hospital. In this part of the site there is the opportunity to make the hospital grounds a welcoming, pleasant space. It is acknowledged however that there are challenges in this respect due to ongoing problems with vandalism and there should be further consideration given as to how the site can be more secure.

Not only does this area provide pleasant views, but it could be used by both staff and patients and visitors to enjoy a break from the wards. The access and circulation around the hospital site and surrounding area could play an important role in making the most of the open space available.

Footpaths leading from the main circulation routes around the site to the wooded area would encourage people towards the open space.

WOODLAND ACCESS

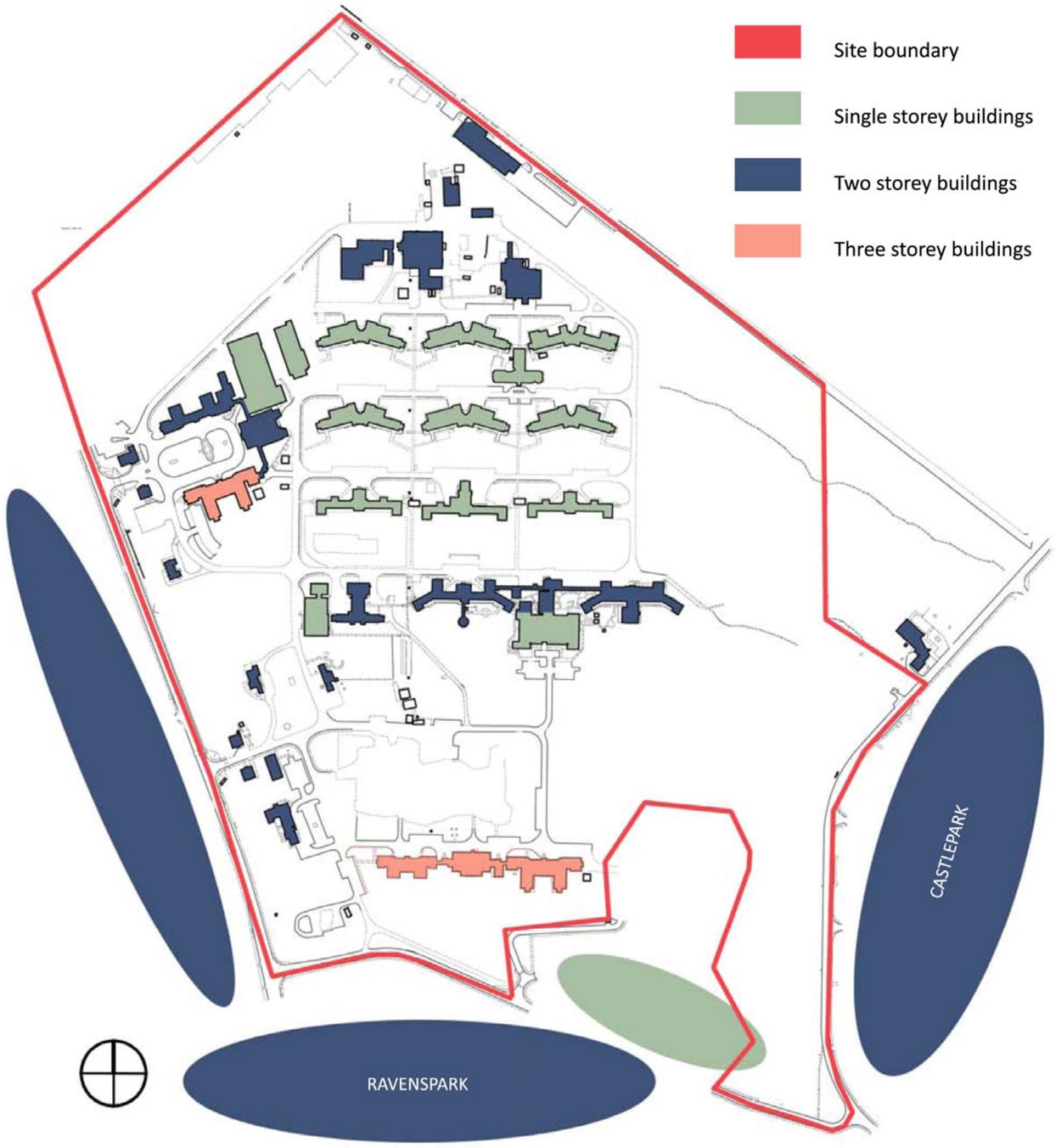
The site is largely surrounded by residential areas of two storey housing. This largely consists of the “Castlepark” housing estate (circa 1970) to the East and the “Ravenspark” housing estate (circa 1960) to the South.

Ravenspark also has a small number of 4 storey maisonettes. Additionally there is a small pocket of single storey housing and a nursing home to the South of the site.

The North Ayrshire Community hospital site itself is dominated by the “Horseshoe” a 2 and 3 storey B listed building and the multitude of single storey pavilions that cover the majority of the site.

The site contains numerous 1,1/2 and two storey outlying buildings. Notably the gate lodges at the main site entrances on the western side of the site.

The former nurses residence to the south of the site now sits in land which is proposed for disposal.



EXISTING DEVELOPMENT SCALE AND MASSING

Section 3: Architecture

3.1 Masterplan Development

3.2 Overall Design Philosophy

3.3 Option Appraisal

3.4 Preferred Option

3.5 Departmental Analysis

3.6 Ward Design

3.7 Departmental Design Overview

3.7.1 30 bed Elderly Rehab and Continuing Care Wards

3.7.2 2x15 bed Elderly Mental Health Wards

3.7.3 Ambulance Entrance

3.7.4 IPCU and Forensic Wards

3.7.5 ECT

3.7.6 Consulting and Intervention and tribunal Suite

3.7.7 Main Entrance

3.7.8 Pharmacy

3.7.9 3 x 20 bed Adult mental Health (AMH) wards

3.7.10 30 bed Rehabilitation Ward

3.7.11 10 bed Addictions and Day Accommodation

3.8 Organisation, Flows and Wayfinding

3.9 Layout and Massing

3.10 Accessibility

3.11 Impression and Ethos

3.12 Patient Experience

3.13 Landscaping

3.14 Fire Strategy

3.15 Acoustic Strategy

3.16 Architecture and Design Scotland

3.17 Statutory Approvals (to be completed)

3.17.1 Planning

3.17.2 Building Warrant

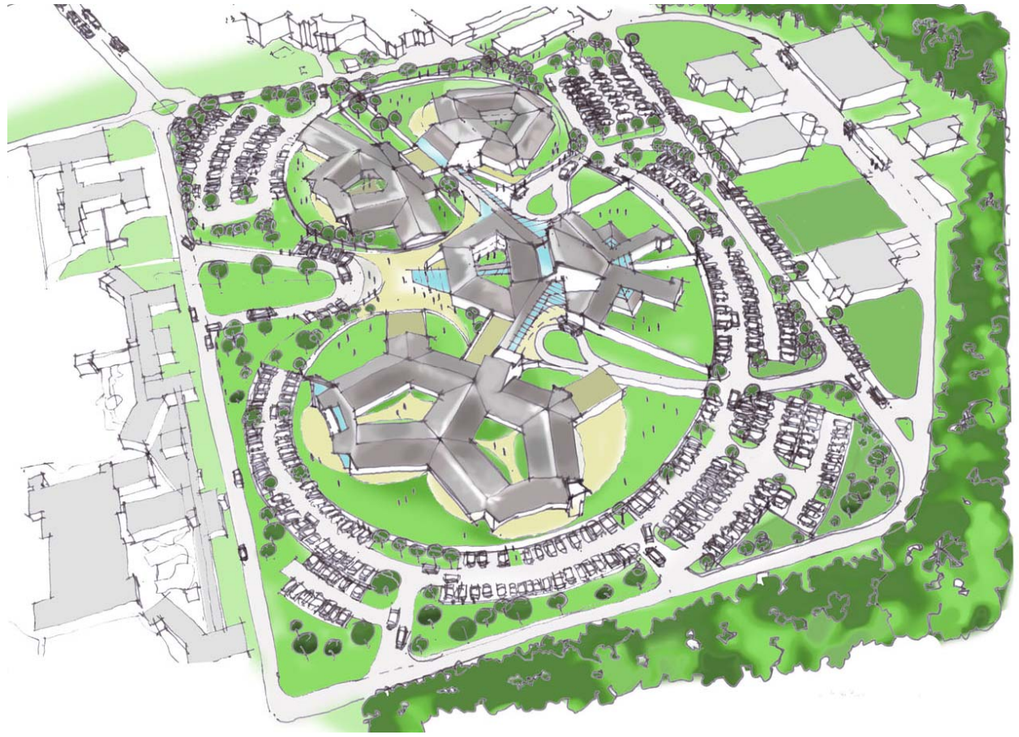
3.18 Summary and recommendations

3.1 Masterplan Development

As part of the requirements for relevant planning consents, a developed masterplan proposal is required for the overall site within NHS A+A ownership associated with the new North Ayrshire Community Hospital Project.

Previously there was a developed masterplan which allocated a significant area of land for potential disposal. Negotiations had also reached a relatively detailed stage with a national housebuilder. Due to the recession, however, the value of the potential disposal site is significantly less than when the original masterplan was developed. Subsequent to that original exercise, it was agreed that a number of options would be developed to identify a worst case scenario in order to test issues such as roads and drainage capacities associated with the different types of development proposed.

NHS Ayrshire and Arran are maintaining ongoing discussions with North Ayrshire Council and other relevant statutory agencies regarding developing proposals. As part of the further development of the project, however, no updated masterplan proposals have been developed and further consideration will be given to the proposed overall site development strategy in the near future.



3.2 Overall Design Philosophy

The purpose of the revised proposals for the new North Ayrshire Community Hospital has been to address concerns over the previous developing design and with the benefit of a revised brief together with the removal of some site constraints which had previously restricted the overall design.

The proposed shift in procurement route also meant that there was a desire to create a more independent new build facility with no physical links to the proposed retained estate. The Exemplar Design now developed has been progressed over a relatively short period of time but with both clinical, estates, public reference group, Health Facilities Scotland and Architecture and Design Scotland input.

The drive has been to create a dynamic new community facility which is founded on good clinical design principles, is patient centred, is operationally efficient and effective, environmentally friendly and creates a new focus for healthcare services in North Ayrshire.

The new hospital will be part of a historic healthcare campus and as such will continue to be a focal point of the community.

Potential future expansion of the healthcare facility has been an important consideration in the development of the design and together with masterplanning for the wider site within NHS Ayrshire and Arran ownership.

The design was developed on principles of stakeholder engagement and consultation in tandem with an interpretation of both high level and more detailed level aspects of the brief. The overall aim has been to develop a holistic design which:

- Separates the facility out in to clear operational zones
- Maximises the potential for accommodation over two storeys
- Provides clear identity for the main entrance and other constituent parts to assist wayfinding
- Integrates both the new building and associated car parking areas into the landscape as much as possible
- Provides discrete FM access and servicing routes throughout the building.

3.3 Option Appraisal

Previously there was a strategic Option Appraisal exercise carried out in support of the Initial Agreement which identified the Ayrshire Central Hospital site as the preferred location for the new North Ayrshire Community Hospital.

As part of the development of revised proposals, there was an Option Appraisal exercise carried out for the proposed site. This was based on an initial stakeholder engagement session — Design Meeting No. 1 which allowed the users to participate in a departmental relationship block planning exercise.

Coloured blocks representative of each department (to scale) were used on an equivalent scale plan of the proposed site for development. This session was preceded by a presentation which included site analysis and an overview of the overall context together with the various site constraints and opportunities.

The overview of the site and relevant context provided the users with background information to help inform the block planning exercise.

The users were split in to two separate groups and this provided all present with an opportunity to contribute positively to the exercise.

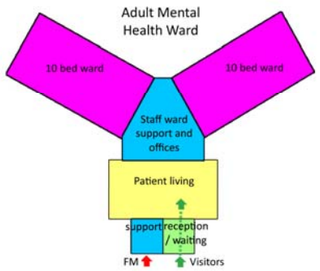
The outcomes of the block planning exercise then informed the development of various options.

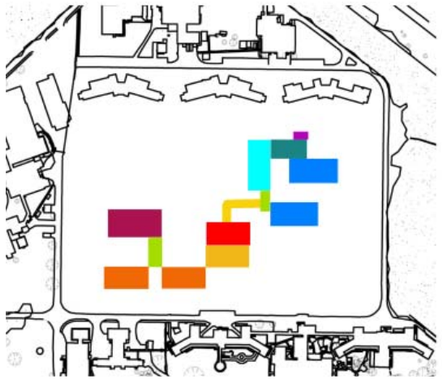
Given the tight time scales that were being worked to and the number of opportunities for stakeholder engagement, the option appraisal exercise included both departmental relationship options together with alternative ward configurations.

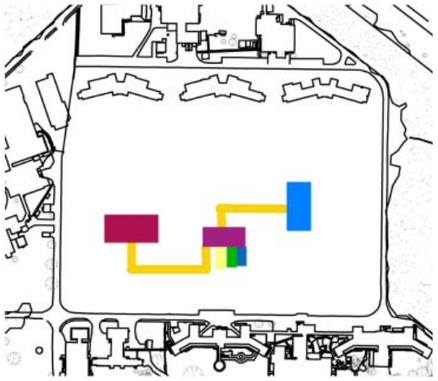
At Design Meeting No. 2 there was detailed discussion regarding the proposed options and these were discussed both in the context of the departmental relationships—horizontal and vertical and also the ward options. A detailed presentation explaining the principles of the ward options assisted the group in decision making over the most appropriate configuration for each of the departments.

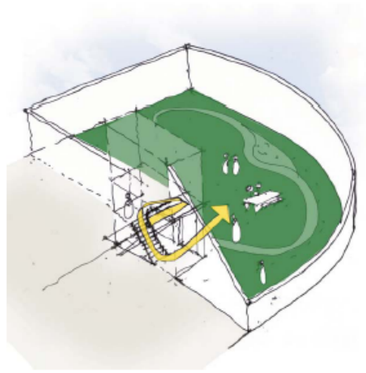
The potential impact of courtyards was reviewed and the amount of natural daylight versus shadow at different times of year and also with different heights and sizes of courtyards.

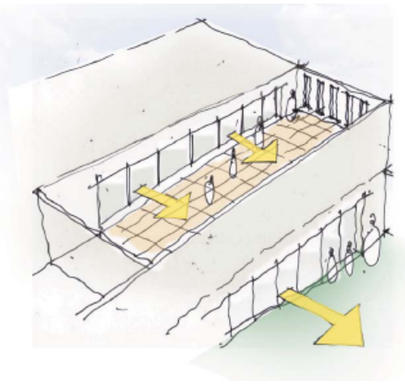
The strategy for the development of a Preferred Option was agreed at this meeting and the design progressed on that basis through a subsequent meeting to refine the proposals followed by a formal sign-off meeting.

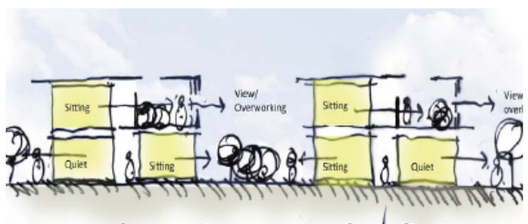


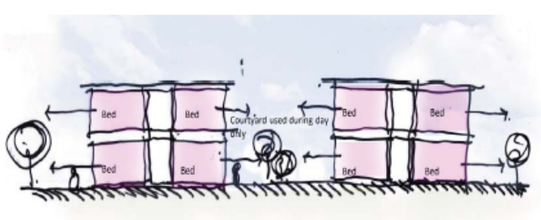












Impact of outside space at first floor

There was also discussion regarding the implications of upper floor ward accommodation and access to external space.

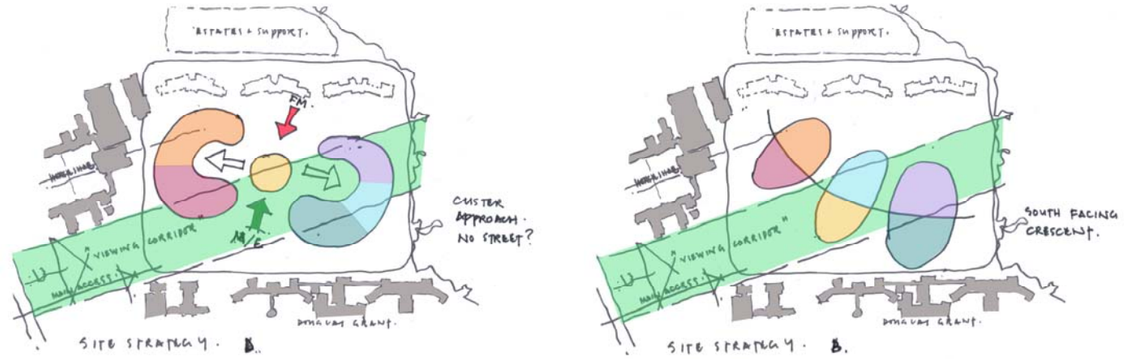
The consensus was that if safe secure and a reasonable area of space could be provided with direct access from ward areas at first floor level then this would be acceptable.

Overlooking issues and also access to ground floor areas was also discussed and this was something which was further discussed in the development of the preferred option.

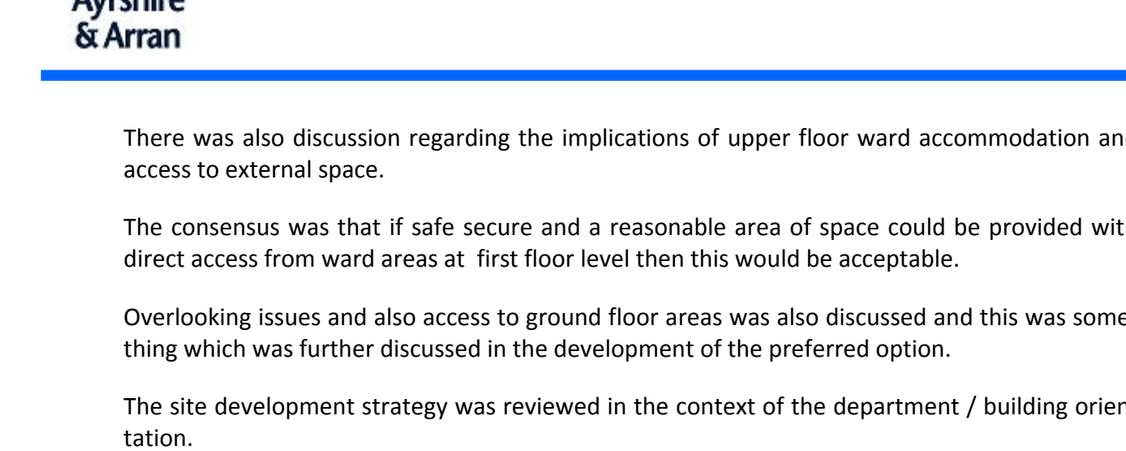
The site development strategy was reviewed in the context of the department / building orientation.

In developing the options from meeting one and looking at the impact of the site constraints and opportunities, various site development strategies were evaluated. These were based on the potential to maximise southerly aspect following the sun path, creation of interesting spaces around the building, potential to have distinct building blocks—ie Elderly, Adult Mental Health and Main entrance rather than a more anonymous homogenous building type.

The strategy for the development of a Preferred Option was agreed at this meeting and the design progressed on that basis through a subsequent meeting to refine the proposals followed by a formal sign-off meeting.

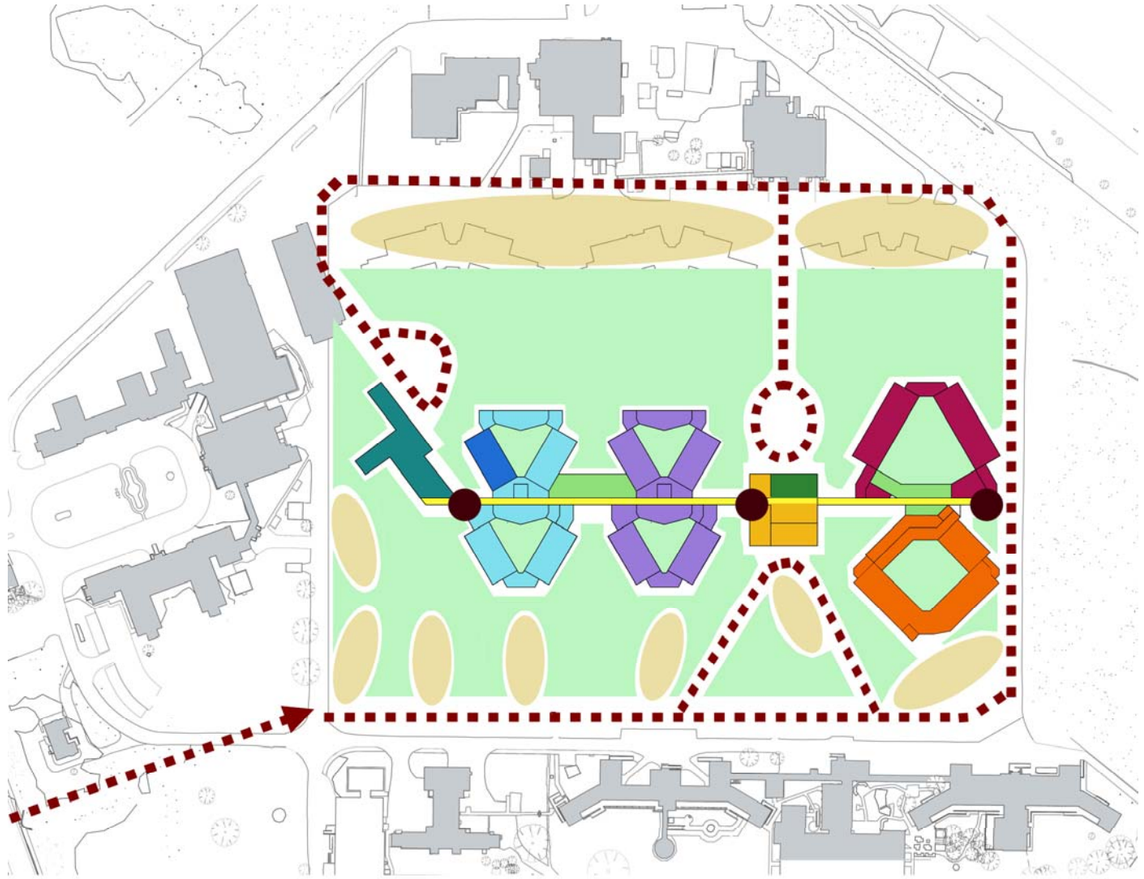


SITE DEVELOPMENT STRATEGY OPTIONS



June

COURTYARD CONFIGURATIONS



DEPARTMENTAL ADJACENCY OPTIONS

3.4 Preferred Option

The Preferred Option is representative of the agreed departmental relationships on both Ground and First floor levels and has been developed further to prove functionality and area efficiency.

The layout is designed to respond to the briefed requirements together with site context and the associated constraints and opportunities that the site itself presents. The design also reflects the historical context with a close adjacency to the Horseshoe complex of buildings. The design is also set up to be provide future flexibility for both expansion of the building itself and also internal conversion for other services and uses.

The building is effectively split into three separate zones with Elderly accommodation adjacent to the Horseshoe, Main Entrance and Pharmacy in the centre with IPCU and Forensic departments to the rear and Consultation, ECT and Tribunal at first floor, Adult Mental Health at ground floor, with Addictions and Rehabilitation located above. The departments are connected by a Hospital Street at both ground and first floor levels and to the North of this street there are centrally located and dedicated FM and ambulance entrance points. The Hospital Street in conjunction with stairs and lifts provides flexible options for movement around the building.

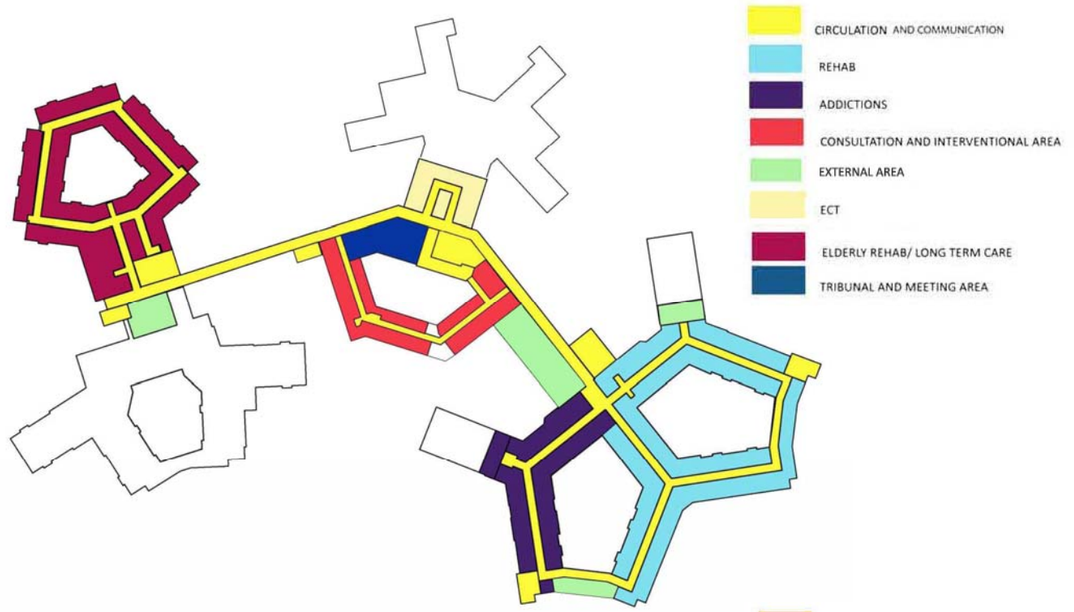
FM servicing is via discrete covered routes on the north side of the Street and access is adjacent to the main lift cores so that FM can fully service both the ground and first floor departments as close to the departmental entrances as possible.

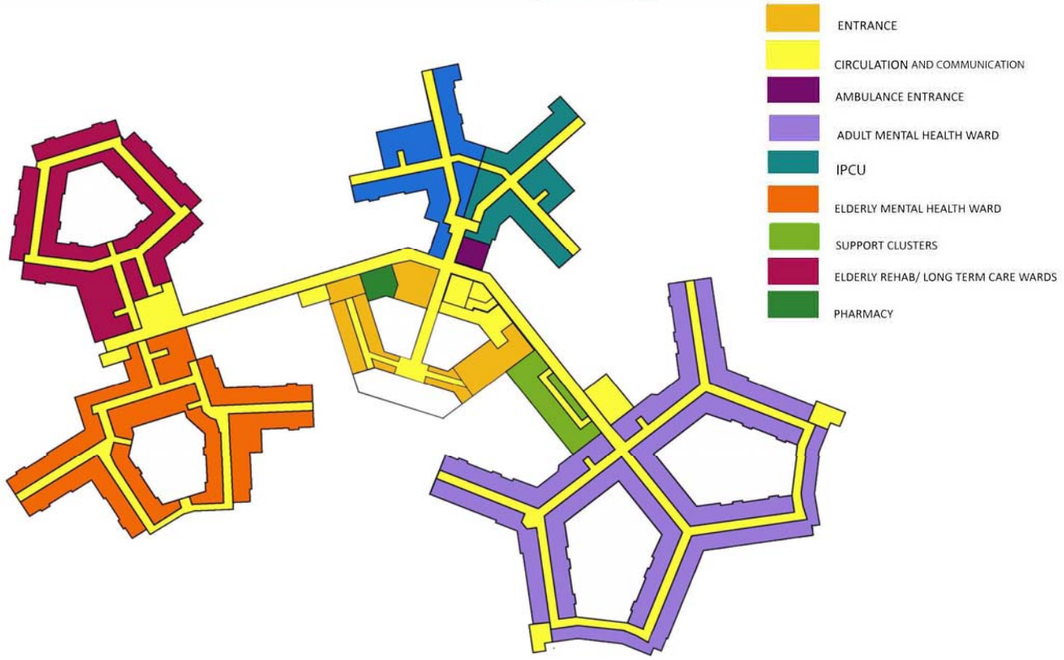
The design has as much accommodation as is feasible, given briefed requirements, on the first floor and there are good vertical links between the ground and first floor from the Hospital Street at strategic locations for staff, patients and visitors. There are open, safe and secure external areas at first floor level so that all patient groups have relatively direct access on the level to outside space.

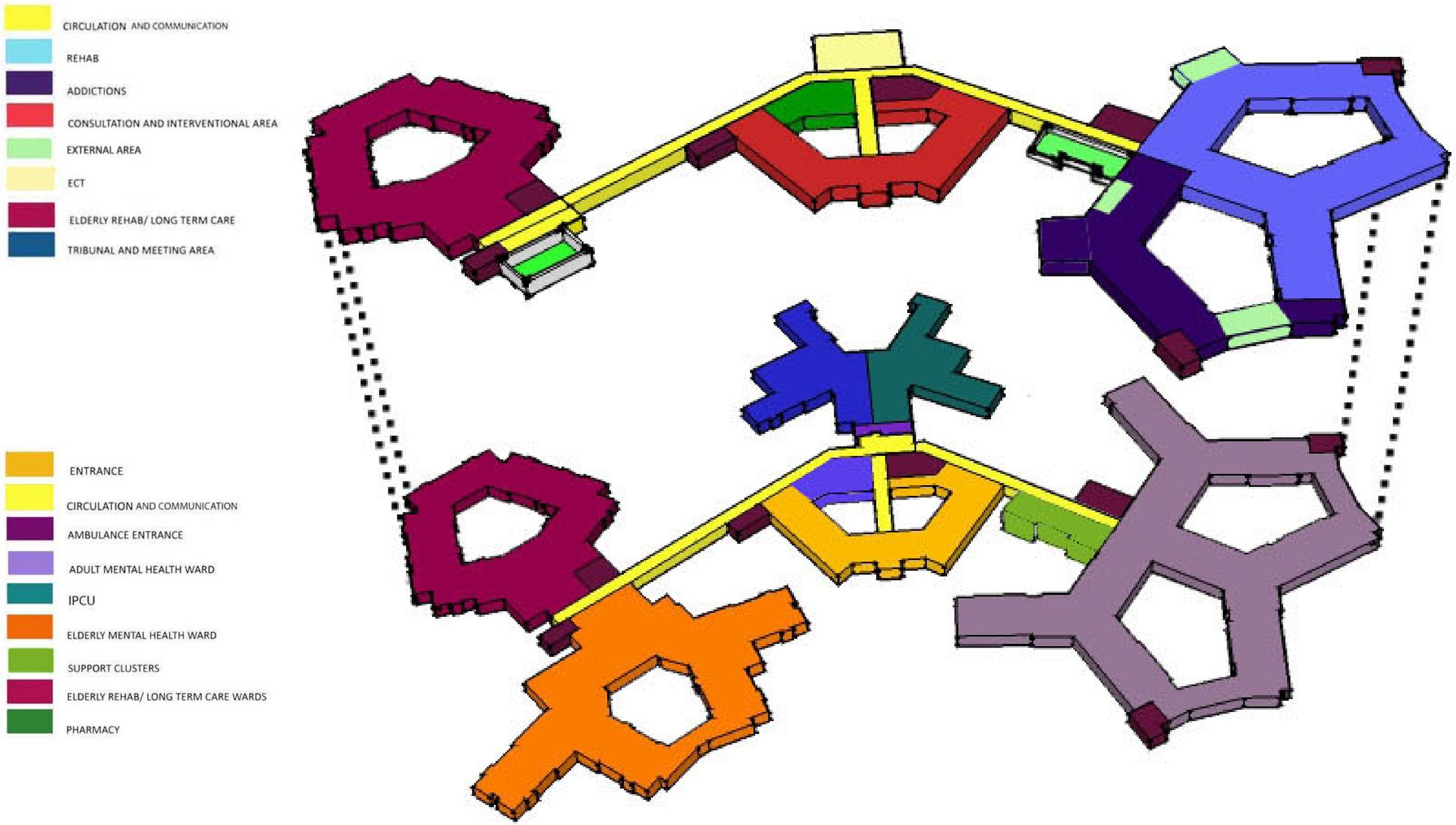
The overall site is organised to provide good vehicular movement with drop offs for cars, patient transport and public transport at the Main Entrance. Goods and service vehicle access is around the perimeter so that there is minimal impact on cars and pedestrian routes. Car parking is set around the perimeter of the site and is designed to blend into the landscape as unobtrusively as possible. Disabled car parking spaces are located adjacent to the main entrance in specially designated areas.

There is potential for additional access points to the building on the North side from car parking areas for both staff and patients/ visitors.

Ambulances will generally be routed via the dedicated roadway which is at the rear of the main entrance and provides central and discrete access to the building and particularly to IPCU.






CIRCULATION AND COMMUNICATION
REHAB
ADDICTIONS
CONSULTATION AND INTERVENTIONAL AREA
EXTERNAL AREA
ECT
ELDERLY REHAB/ LONG TERM CARE
TRIBUNAL AND MEETING AREA
ENTRANCE
CIRCULATION AND COMMUNICATION
AMBULANCE ENTRANCE
ADULT MENTAL HEALTH WARD
IPCU
ELDERLY MENTAL HEALTH WARD
SUPPORT CLUSTERS
ELDERLY REHAB/ LONG TERM CARE WARDS
PHARMACY

3.5 Departmental Analysis – general principles:

The initial user group design workshop sessions established that the hospital departments and wards could be categorised into the following groups:

- Those serving elderly, including MH Elderly
- Those providing Adult Mental Health and Rehabilitation and Addiction care.
- Provision of higher security mental health services – ie IPCU and Forensic Departments
- Main Entrance or central accommodation, serving all or most of the above groups, with the main entrance acting as a central hub to all departments.

The schedule of accommodation also provides "Support Cluster" accommodation, which provides additional accommodation which in principle is shared between a number of departments:

- Support Cluster 1 – serves AMH and IPCU wards
- Support Cluster 2 – Rehabilitation and Addiction services
- Support Cluster 3 – Elderly ward accommodation.

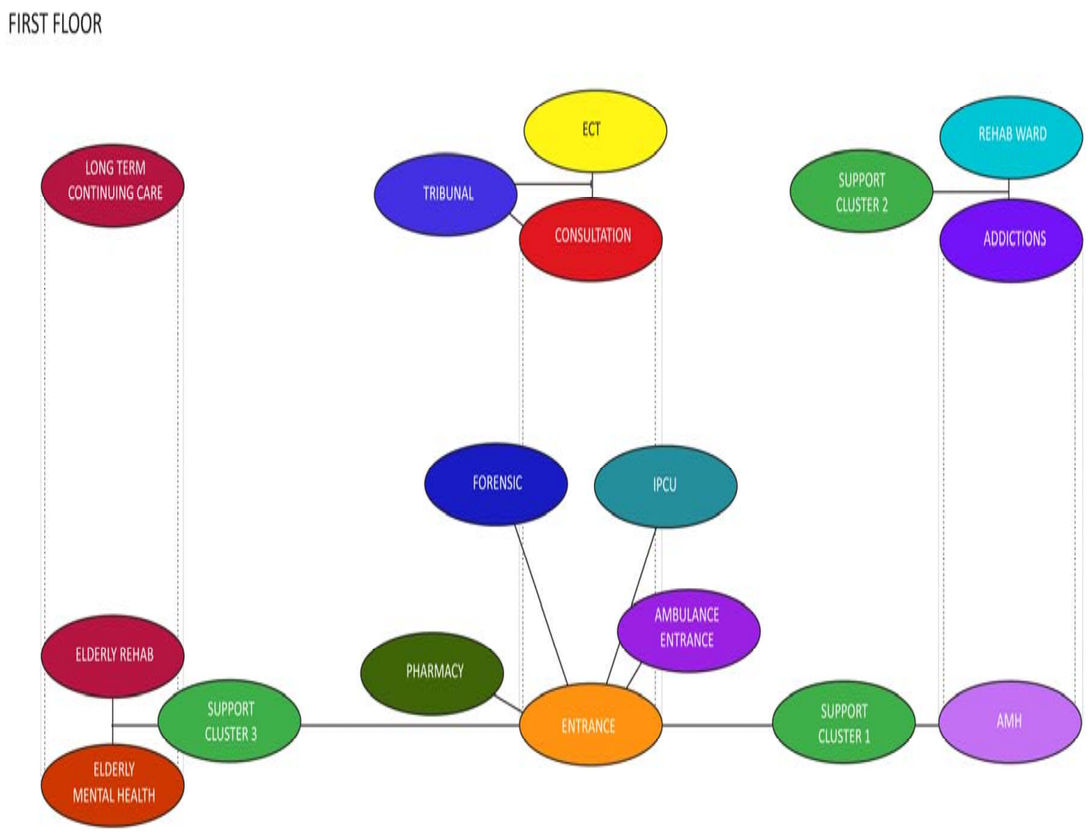
In the development of the Exemplar Design, most Support Cluster accommodation has become embedded in one of the departments they serve. There is only a stand-alone "Support Cluster 1" unit located outwith but immediately adjacent to the AMH Wards. This provides assessment care for all three wards without requiring separate entrances to any of the wards.

Initial Design workshops established that the main entrance and any shared accommodation should be as central as possible to the complex.

From discussion, it was determined that Elderly accommodation would benefit more from being in close adjacency to staff changing facilities within the Horseshoe Building on the west side of the site, while Adult Mental Health would benefit from being on the quieter eastern end of the site.

From the Option Appraisal process described previously, FM Servicing was proposed to be from the North of the site leaving the South as free as possible to maximise aspect for patient areas and create a central entrance concourse. IPCU and Forensic Wards would also benefit from being located in this discreet environment on the North side, with excellent adjacency to the Ambulance Entrance and vehicular access also from the north.

NORTH AYRSHIRE COMMUNITY HOSPITAL: KEY NEW BUILD ELEMENTS



3.5 Ward Design

In the design development process, stakeholders were presented with various ward configurations. Considerations such as

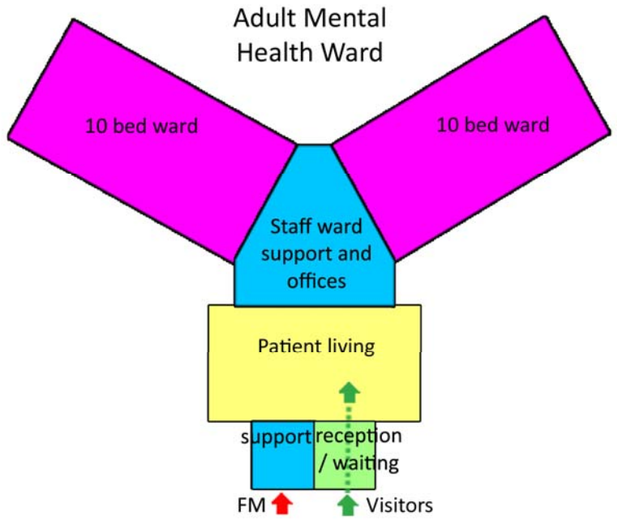
- visitor access to facilities to meet patients
- southern exposure to day areas, with no overshadowing from other buildings
- proportions of rooms requiring daylight and those not (ie stores, staff utility rooms)
- the number of bedrooms/bedroom clusters within a ward and patient privacy to these areas
- FM servicing and pantry access contributed to the most suitable form choice for each ward type.
- Implications of courtyard design

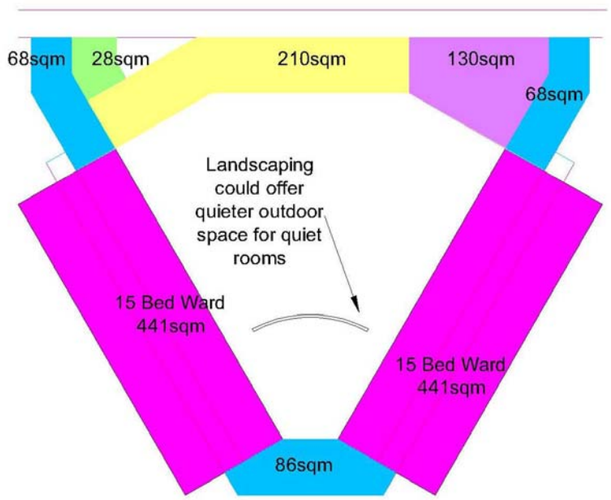
Through the Option Appraisal, the user groups were provided with a number of potential configurations which responded to the briefed requirements. The options also were allied with the departmental relationships on site to give a perspective of how the above factors impacted on design and sub-departmental relationships.

Whilst providing each bedroom with a view beyond the hospital site would be desirable, it is not necessarily the most efficient solution.

Where ward design does required bedroom views to overlook courtyards, the courtyard shape whether hexagonal or pentagonal creates a form where no other bedroom or living area looks directly into patient bedrooms retaining their privacy.

Landscaping immediately outside bedrooms on the ground floor both within courtyards and adjacent to patient garden areas will discourage access directly in front of bedroom windows. This is illustrated on the sketch proposal on the right.





3.7

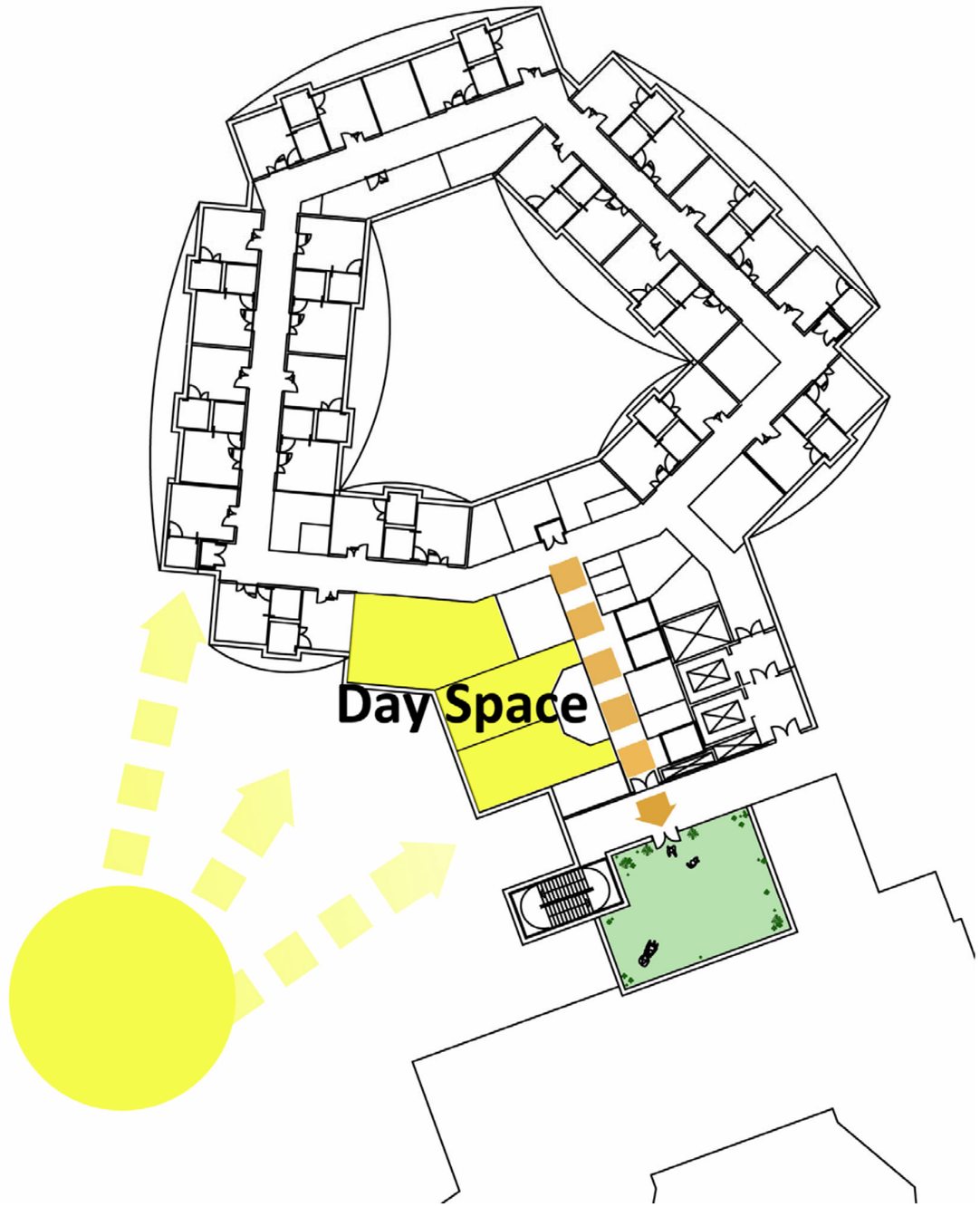
3.7.1 30 Bed Elderly Rehab & Long Term Care Wards

Both of these wards are identical in their accommodation briefing, with the Long Term Care Ward located on the first floor.

Within the design workshop sessions it was strictly stated that any elderly accommodation located on the upper floor must have immediate access to their own external area. Consideration has been given to the design of this area so that LTC patients do not overlook MH Elderly Organic patients using the courtyard below, to the benefit of both groups.

It is anticipated that the Elderly Rehab Ward will accommodate more mobile patients than the Long Term Care Ward, and so the majority of support cluster accommodation which rehabilitates patients has been located on the ground floor either within the ward or immediately adjacent across the hospital street within the MH Elderly ward.

Clinicians present at the design workshops expressed a fundamental requirement for good southern aspect to the main living areas and provision of quieter sitting areas within the bedroom accommodation. The ward design offers supervision to day areas and courtyard by means of the duty room and staff base respectively. The exemplar design also offers the opportunity to introduce touch down bases to assist night-time supervision which are not currently briefed, and patient resting areas to the north of the ward.



3.7.2 2 x 15 Bed MH Elderly Wards

As well as good southern exposure to all living areas, the main component of the design in both the functional and organic wards is excellent supervision to all patient areas. Whilst it is anticipated that staff will always be present within the patient day areas, additional monitoring of bedroom, external areas and wander routes are provided with the central locations of staff bases and staff offices.

Clinicians also expressed a need to split each 15 bed ward into smaller clusters to aid night-time supervision and this also allows potential to divide patients into groups according to their gender. Access between the two 15 bed groups is retained to the south of the ward to allow staff from each ward to provide further assistance to each other if required. This also provides flexibility for ward reconfiguration in any future changes to operational policy or ward use.

It is intended that the 15 Bed Ward on the west side will be for elderly patients suffering from dementia and other organic illnesses. It is therefore proposed that these patients have sole use of the internal courtyard for maximum supervision and safety. Potential wander routes as illustrated give opportunity to patients to go safely outside at any time if they are able.

Access to an external garden area has also been provided from the main patient living areas of the functional elderly ward.

3.7.3 Ambulance Entrance

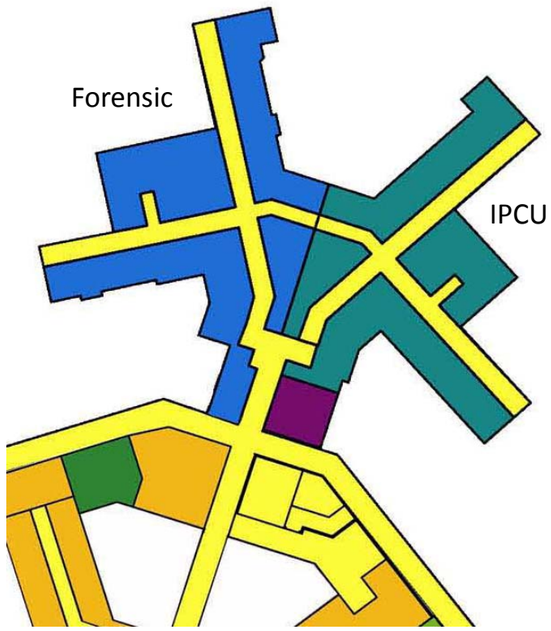
Briefing requirements indicate that the Ambulance Entrance should have a central but discrete location. The exemplar design achieves this with immediate adjacency to Forensic and IPCU wards. Its central location at the rear of the main entrance also offers discreet drop-off and pick up for the Tribunal Suite, located in close proximity on the first floor.

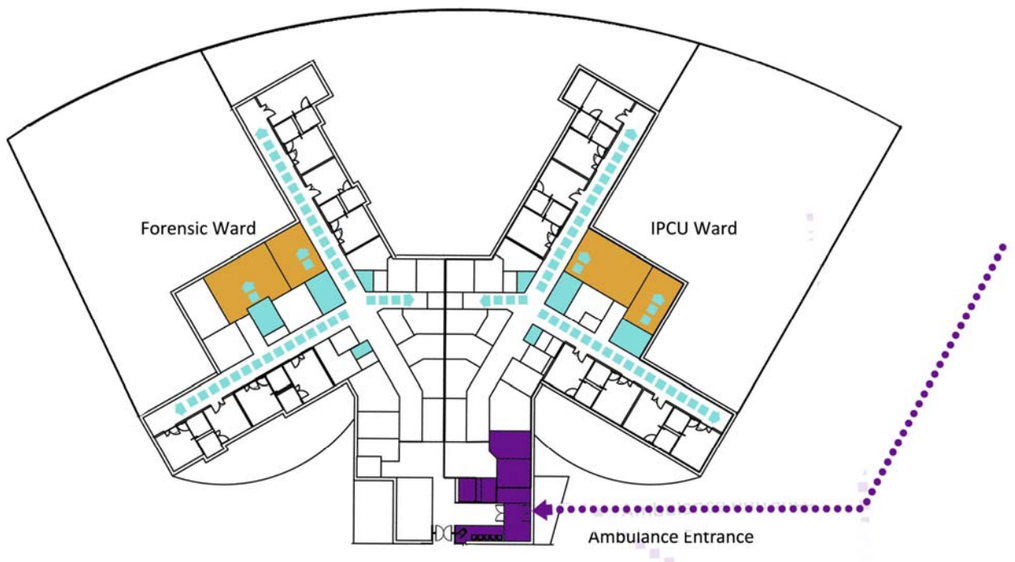
3.7.4 IPCU & Forensic Wards

Both of these wards have similar briefing requirements and almost form a mirror image of each other. As previously stated, both have excellent but discreet access to the Ambulance Entrance, and are located to the rear of main entrance. Overlooking from any other patient accommodation is minimised through ward shape and orientation.

Visitors to both departments can choose to see patients on a one-to-one basis at the entrance to the ward, or go through the secure lock down area and meet in the patient living areas. Multi-purpose rooms immediately adjacent could also be used for this purpose.

Again the ultimate design factor for both of these departments is excellent supervision. Single sided corridors to bedrooms can potentially be monitored by staff in patient living areas, touch-down bases, and staff bases. Fitness suites can be monitored by staff in duty rooms, and external patient areas can also be monitored by staff in patient living areas and duty rooms.





3.7.5 ECT

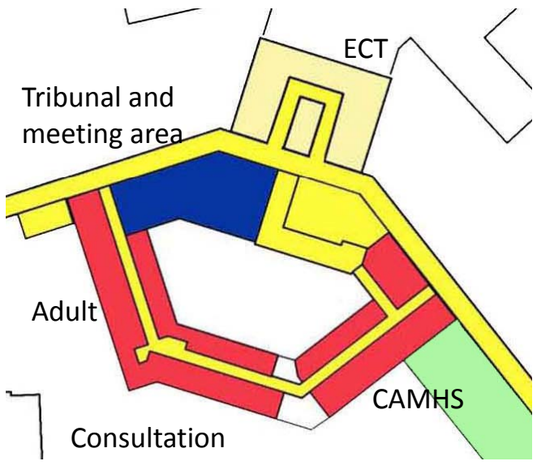
User group workshops highlighted that this department should be central but offer discrete access to both Elderly and Adult Mental Health accommodation. It is intended that the first floor hospital street will be used for FM servicing together with any necessary staff and patient movement including the discrete access required to this facility. The clinical accommodation within the department is based on the patient's progression through treatment – ie waiting treatment, Stage 1 recovery , Stage 2 recovery in clockwise direction as illustrated.

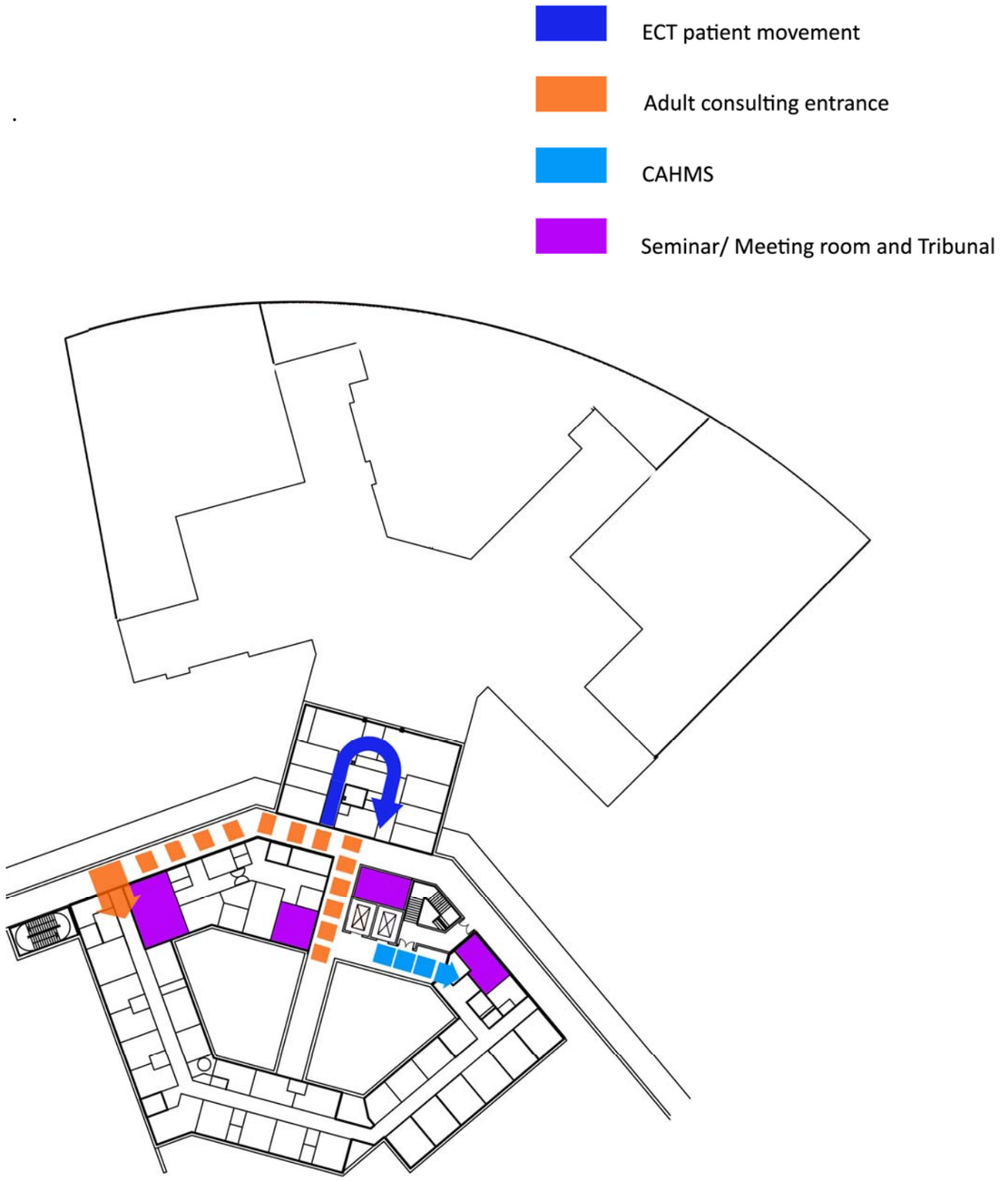
On-call accommodation is also located within this department offering a central but relatively secure location and near the porter's accommodation on the floor below.

3.7.6 Consulting Intervention & Tribunal Suite

Discussion with clinicians revealed concerns over how the Consulting/Intervention sub-departments could be planned to provide separate access to CAMHS. In the Exemplar Design- the CAMHS facility is immediately adjacent to the stair and lift core, whereas all other users are directed in the opposite direction to the Tribunal and Adult Consulting/Intervention, both accessed off the hospital street.

Given the number of seminar facilities briefed within both of these departments the opportunity arose to provide a suite of rooms which will not only serve these departments, but potentially have the flexibility to provide an excellent conference/meeting facility to the wider community in the evenings. The departments have excellent connectivity to the main entrance via a two lift and stair core.





3.7.7 Main Entrance

The Main Entrance is centrally located within the building and is accessed off a main public piazza / concourse area which is the main drop off point and access for staff patients and visitors.

The layout is relatively compact and scaled in line with the building generally so as to treated as part of the healing environment.

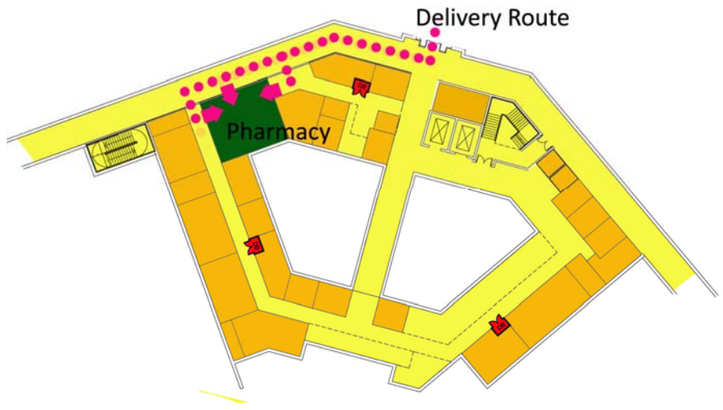
There is a large courtyard split with a glazed link which connects directly to the main Hospital Street .

The open waiting area merges into cafe area to promote a friendly and relaxed atmosphere. Both these areas open to the public piazza and internal courtyard to maximise the interaction between outside and inside spaces and particularly good southerly orientation.

Support accommodation is located discretely where required and the Spiritual area is accessed off the Hospital Street rather than through the more public main entrance areas.

3.7.8 Pharmacy

The pharmacy is centrally located off the main entrance, with good vehicular access to the rear off the Hospital Street for deliveries, and serving other wards/departments in the wider hospital campus and beyond as required.



3.7.9 3 x Adult Mental Health (AMH) 20 Bed Wards

Further to presenting clinicians with various ward forms and configurations (as described in Department Analysis: General Principles), the 20 bed AMH ward was developed to form a Y shape.

The major benefits of this configuration are considered to be

- Visitor reception near ward entrance, private meeting room or patient living areas directly adjacent.
- FM access to cleaners rooms and disposal rooms near ward entrance
- Pantry near ward entrance for easy FM servicing

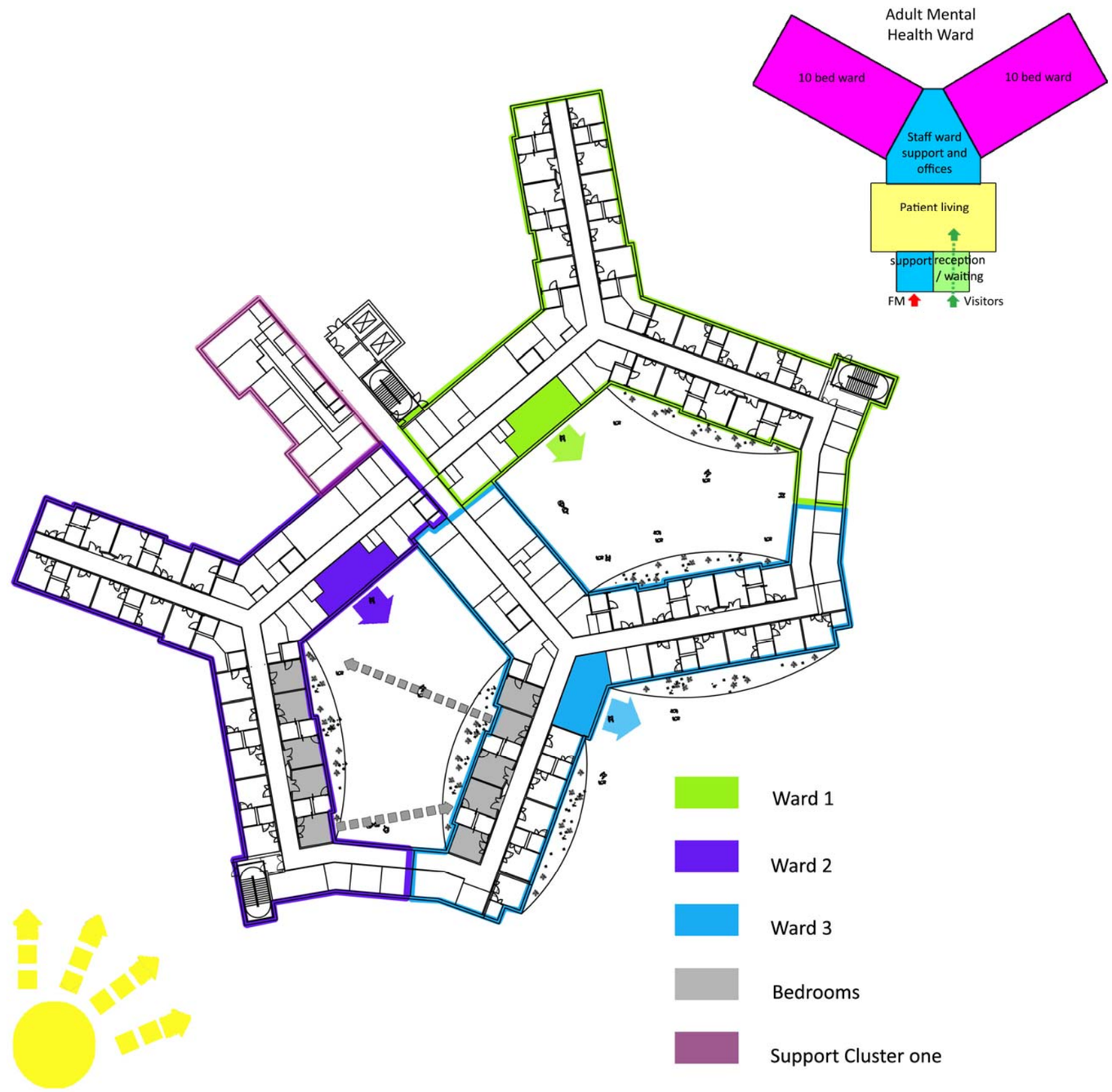
Splitting the bedrooms into two clusters around a hub allows better night-time monitoring and the potential to separate patients according to gender groups. Bedrooms are located furthest from ward entrance and living areas, promoting patient privacy.

The pentagonal courtyards are formed when each of the 20 bed 'Y' shaped wards are placed at 90^{o} to each other , with lonk corridors connecting ward bedroom areas. Bedrooms and En-suites are stacked at first floor level, achieving economy of services distribution and drainage, while offering the opportunity for different support accommodation layouts and potential for external space at first floor level.

Clinicians also expressed a preference for southern aspect to patient living areas which has been achieved in the exemplar with the exception of the two dining rooms on the outside wards, which should benefit from a sunset view in the evening.

It is anticipated that the outside wards (Ward 1 & Ward 3) will be sole users of their respective adjacent courtyards as illustrated, with the central "Ward 2" having access to external garden space also directly accessed from the main patient sitting area.

Support Cluster 1 accommodation which is intended to serve these wards and the IPCU, is located immediately outside the entrance to all three wards.



3.7.10 30 Bed Rehabilitation Ward

As this ward is located on the first floor with three clusters of 10 bed wards stacked directly above some of the Adult Mental Health bedrooms, the ward configuration follows a similar pattern to that of the AMH Wards below. In summary, FM and visitors' accommodation are located at entrance to the ward, most patient living areas benefit from well sunlit rooms, and the bedroom areas are furthest from the entrance to promote patient privacy.

As this ward has no direct access to the courtyards or gardens below, it is fundamental that patients have direct access to external spaces. In the exemplar design these are:

A large external area above the Support Cluster 1 block, adjacent to the ward entrance.

External area potentially accessible from the corridor and the Fitness Suite.

Shared external area with Addictions Wards, accessible at the end of one of the bedroom clusters.

The Fitness Suite and the rest of the Support Cluster 2 accommodation is embedded within this department and may be shared with the adjacent Addictions Department.

3.7.11 10 Bed Addictions Ward and Day Accommodation

This department is used by both in-patients and day patients, and so the Exemplar Design has consciously placed the bedroom accommodation remote from the ward entrance and day user accommodation to retain patient privacy in these areas.

The bedrooms have been divided into clusters of six and four to offer the opportunity to split in-patients into groups according to gender or addict types.

As well as the potential to use external areas available to the adjacent Rehabilitation ward, clinicians also requested that the Addictions have their own access to an external area within the ward and this has been provided potentially directly adjacent from the Therapy/Activity area, which could also be accessed from the corridor opposite the social sitting area.

3.8 Organisation, Flows and Wayfinding

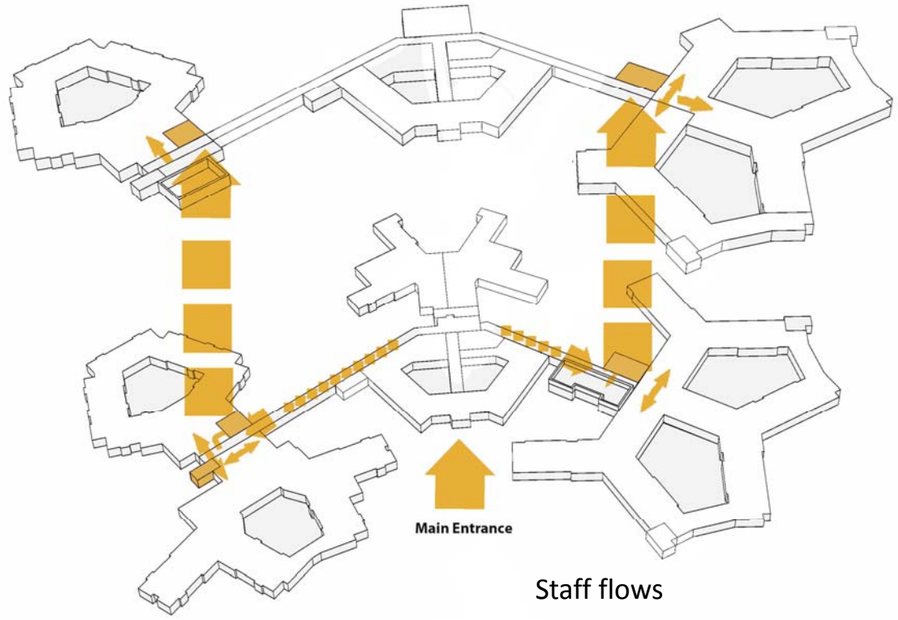
Excellent flows for all staff (including FM), patients and visitors throughout the building are critical to the successful operation of the hospital.

The design solution is a logical arrangement and this will assist intuitive wayfinding from access off Kilwinning Road through to entrances to each department.

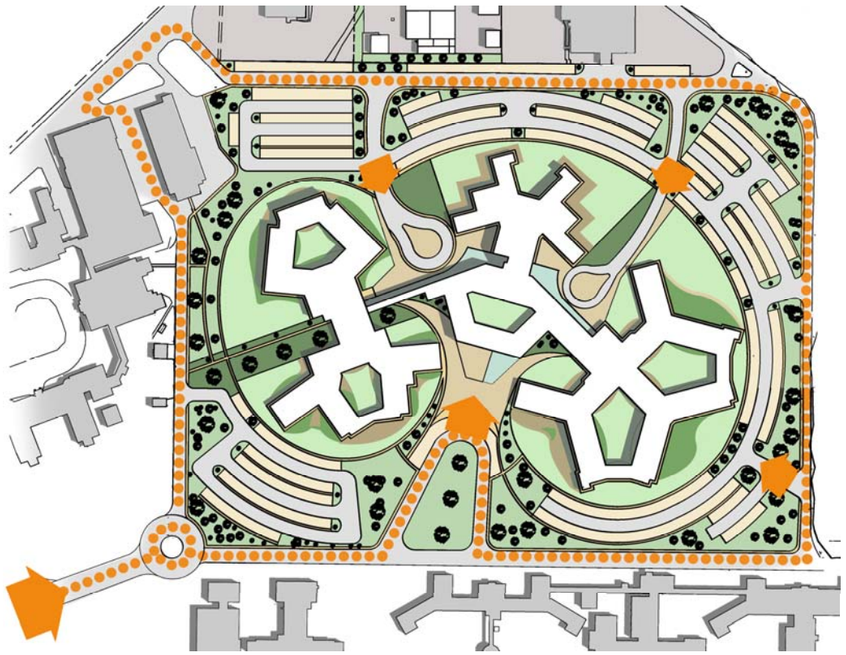
Site wide flows are predominantly vehicular but priority is given at all relevant locations to pedestrians and cyclists. Clear designation of routes should be developed and refined through subsequent design stages. Refer to subsequent sections for further information on vehicular movement including service vehicles and car parking.

The Main routes for visitors from the main entrance are to the Hospital Street with access to all ward areas being via this route at ground floor level and linking to first floor via the dedicated lift cores at the West and East ends of the building. There is potential for access to the main entrance area from the rear car park areas via dedicated route adjacent to the ambulance entrance.

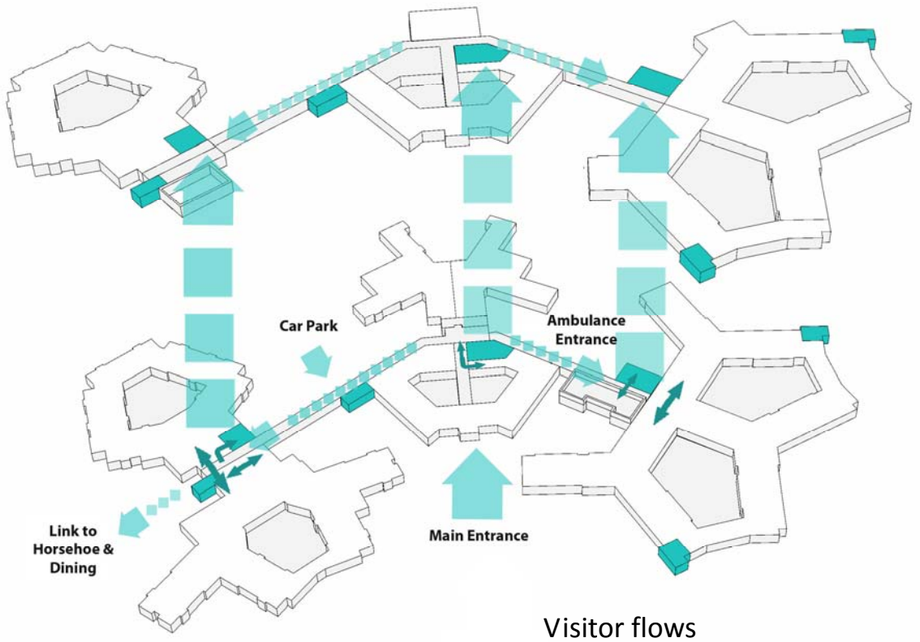
Staff will follow similar routes to visitors though there is potential to allocate a dedicated staff car parking area to the rear and adjacent to the staff dining area with a separate staff only access to the rear of the main entrance adjacent to the FM entrance route.



Staff flows



Main vehicular route



Visitor flows

Patient Flows

Patient access and routes around the hospital are illustrated very generically in the diagram on the right.

Each patient group will, however, use the building and outside grounds in potentially very different ways, with varying levels of security and associated freedom.

The design caters for the safety and security of staff, patients and visitors through the hierarchy of spaces and routes connecting them both outside and inside the building.

IPCU and Forensic are required to be secure areas both internally and externally and therefore access and egress for staff, patients and visitors will be carefully controlled.

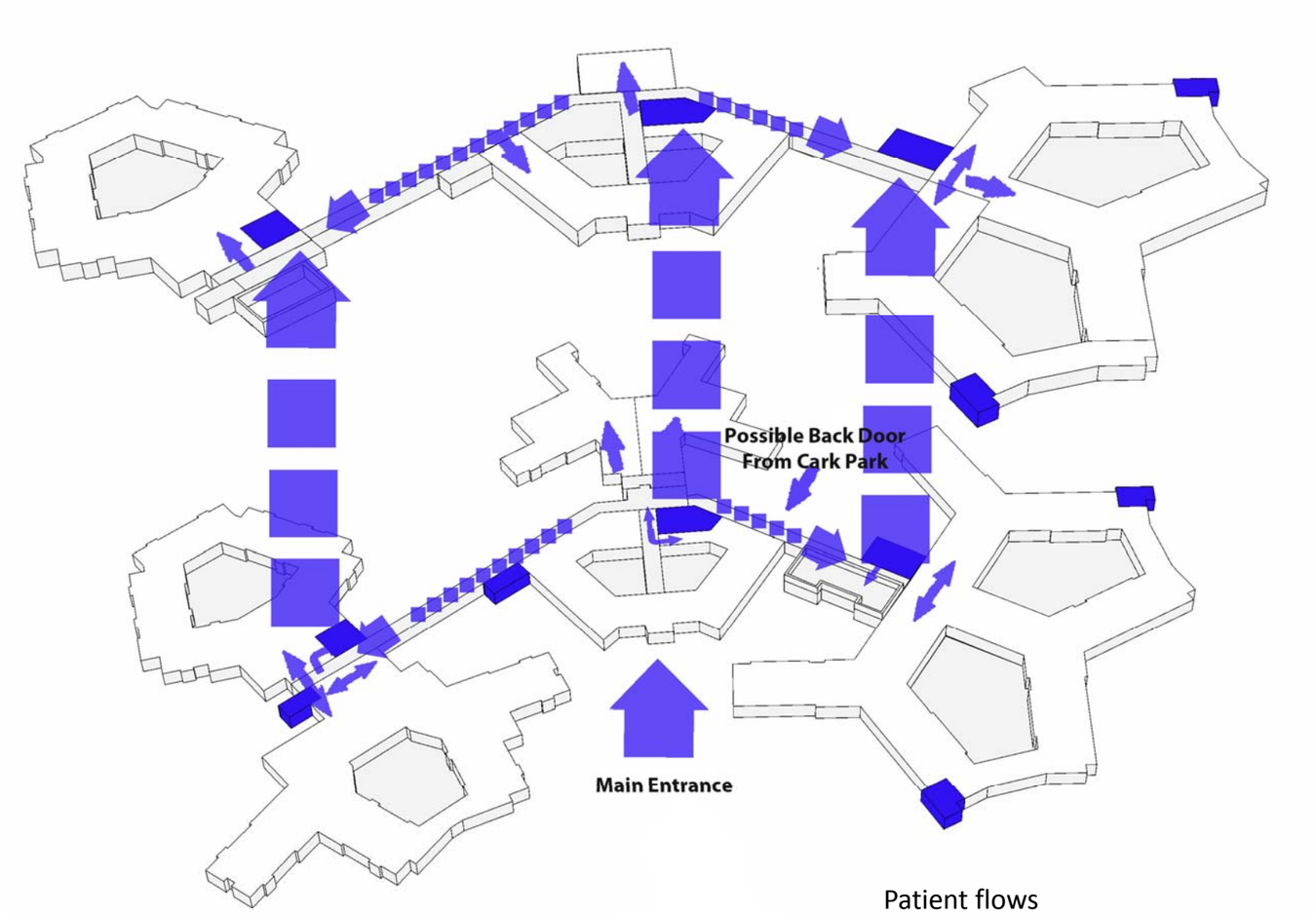
Other patent groups may be at the other end of the security spectrum where they are free to come and go as they please and often as day attendees.

The Hospital Street can be used at both ground and first floor, as can all the main stairs and lift cores though patients will generally be directed to use the vertical communication closest to the first floor departments they may be coming and going from, whether on their own or with staff and/or visitor support.

The central lift and stair core at the main entrance performs two functions. It is both the main access route to Consultation areas and Tribunal and also potential backup for an lift failure at the West or East cores. The availability of the street at first floor level will assist this flexibility in the lift strategy to minimise the number of lifts to be provided. Operational policies will be required to support this strategy to maintain appropriate segregation of patient movement when required.

As previously outlined, CAMHS has a direct access off the main entrance lift and stair core in order to minimise the length of time young people are potentially mixing with other patient groups.

Patients will be able to access dedicated external space at both first floor and ground floor levels and the perimeter stair cores may be used to facilitate more direct access though again this will have to be dealt with on an operational policy basis.



Patient flows

FM Strategy and service routes

Good central and discrete primary FM access is a priority in any hospital.

The safe access, movement and operation of various FM services as diverse as window cleaning to post delivery has to be catered for in terms of movement in and around the building.

The diagram on the right indicates the primary FM flows only though the principles are similar for all the relevant services.

There is a dedicated main FM access and delivery point at the rear of the main entrance. Goods and personnel can access the building in three main locations.

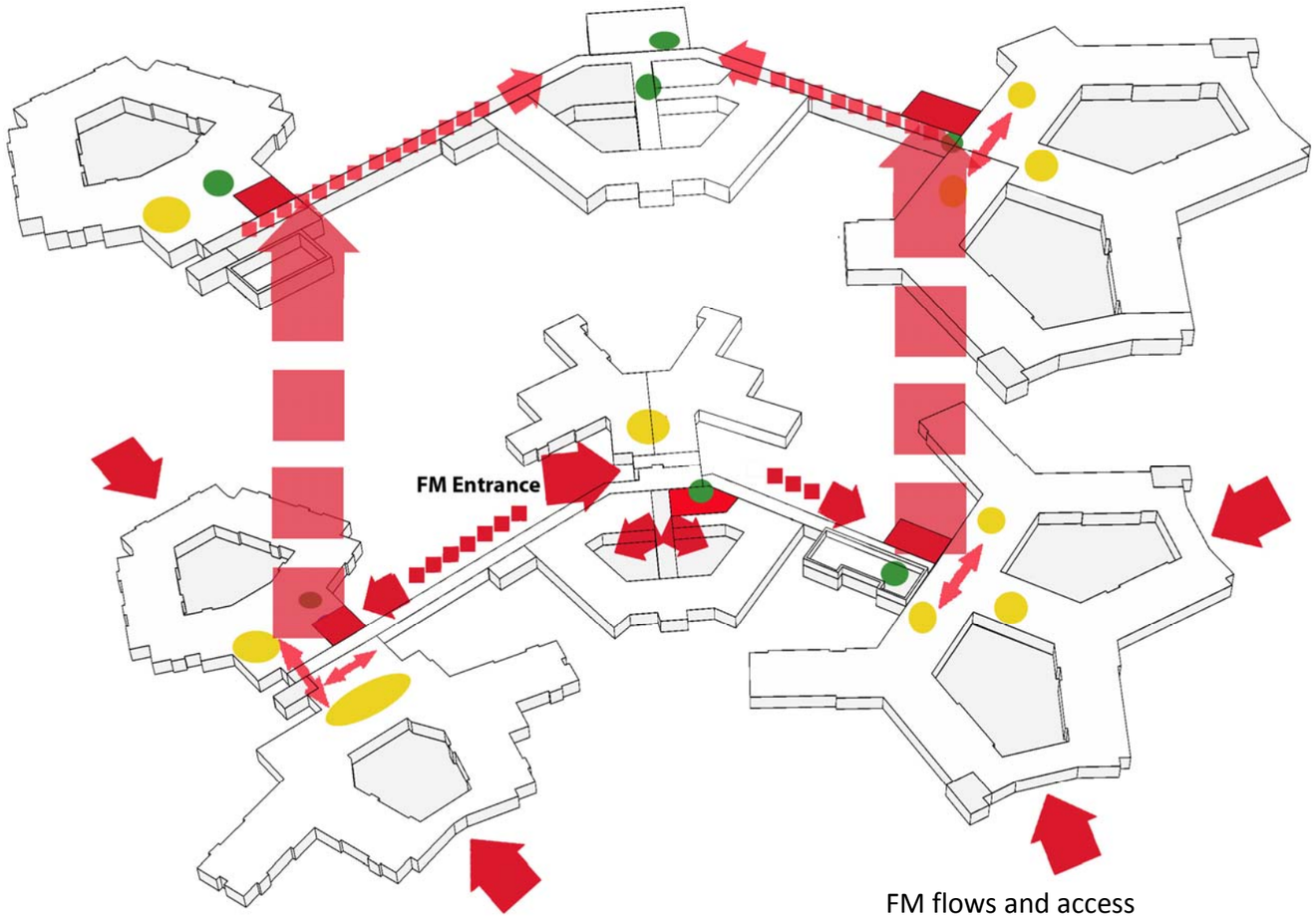
- At the main FM access point via a secure lobby which also separates the hospital street from IPCU and Forensic—this will be a controlled access point which allows segregation of staff, patient and visitor flows from FM though programmed access control on all relevant doors. This will also link to the Ambulance Entrance. The FM access will be along the North of the street in a dedicated and covered route which will connect to the lift cores at the East and West ends of the building.

- At the East and West ends there is secure access into the building adjacent to the lift cores and these entrances provide the shortest routes to the main ward disposal hold areas and pantries serving dining areas. Each of the lift cores has a dedicated FM lift and this will have secure access for FM staff only. In the event of lift failure then there is always the option to go to the other FM lift and use the first floor hospital street to service upper floor areas.

- The Hospital Street at first floor level is primarily for FM use and will provide segregation from visitor movement in particular.

- Ward courtyards are accessed via primary FM entrances on the perimeter as indicated on the diagram on the right. Some of these entrances double as usable accommodation where appropriate. This means that any heavy or bulky machinery can be safely transported via the shortest and most direct route for external maintenance and repair.

- Access to the main entrance courtyards together with Pharmacy, Café and Shop is via the rear of the main entrance. Any movement through this area will require more careful management and programming.



FM flows and access

3.9 Layout and Massing

The design process which has been outlined in previous sections was also underpinned by a careful approach to the achievement of a contextual design which responds to both the historic and environmental influences of the site.

The site development strategy that evolved essentially followed the agreed departmental relationships and ward typologies allied with the desire to maximise exposure to the sunpath to benefit day areas in particular.

The alignment of the Hospital Street is on the primary axis of the historic Horseshoe and this is then cranked at the main entrance area to set the AMH wards, rehab and addictions orientation to address the tree belt and maximise exposure to the sunpath. The folding of the footprint in this direction then opens up the North elevation to maximise the area for both external space to the ward areas on this side of the building and also make enough access provision for the ambulance and FM vehicular entrance points.

This geometry creates a sheltered entrance zone which quickly reveals itself when seen from the entrance route from Kilwinning Road. Dedicated access for vehicle drop-off and disabled car parking provision is provided in front of a public piazza area which enjoys southerly aspect.

The perimeter of the building is then further articulated by virtue of the ward footprints in particular to create a rich and varied back drop to the hospital with each part of the building effectively given its own identity though in a common language of materials and massing.

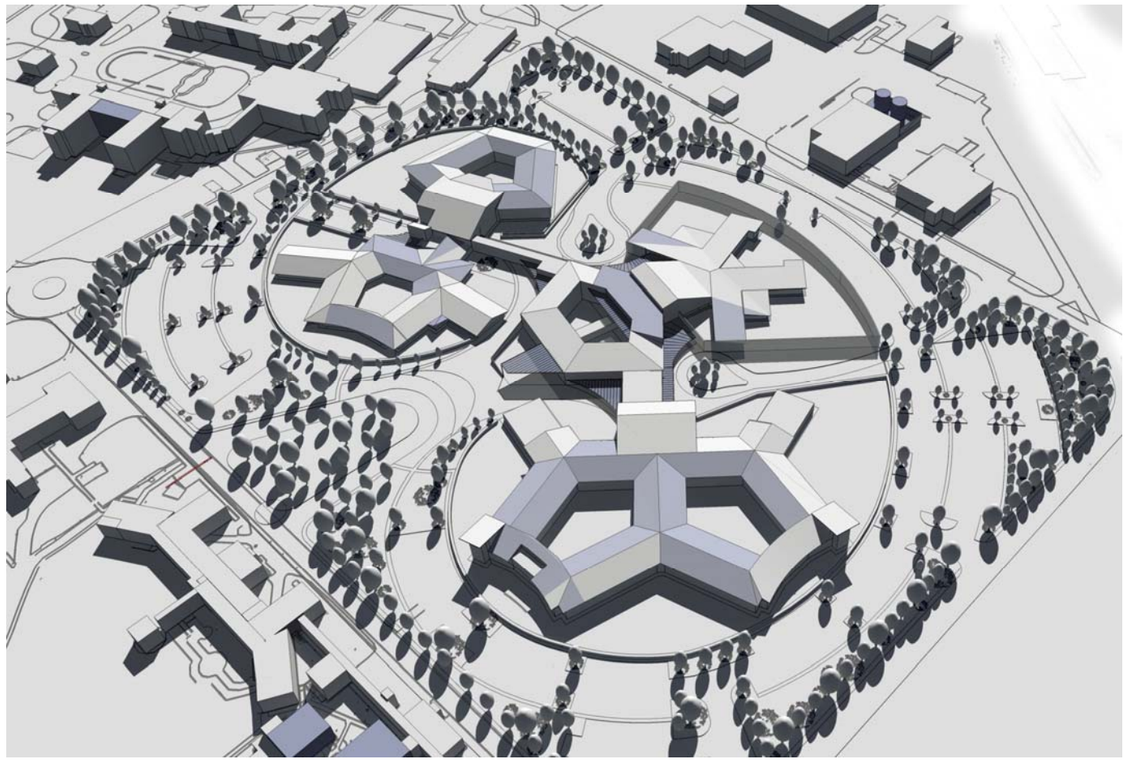
Few areas of façade are directly South facing though almost all areas will benefit from exposure to the sunpath at most times of the year. As previously outlined, studies were carried out of courtyard design to ensure that orientation of these did not overly impact on shadow penetration.

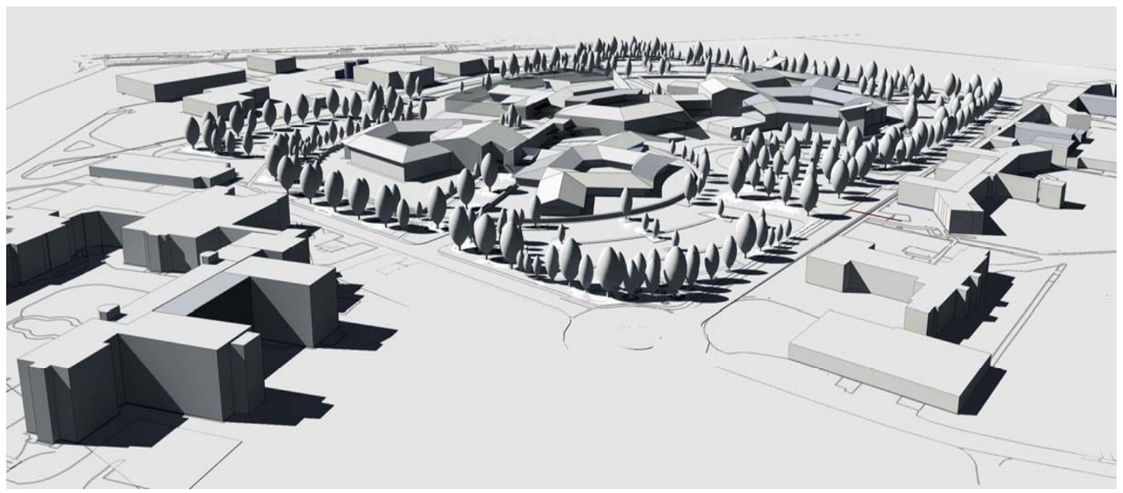
Extended roof overhangs where required will reduce the potential for summer overheating of rooms, though consideration has been given to further passive solar control in two storey areas.

One of the primary objectives of the Exemplar Design was to maximise the potential of having in patient accommodation at first floor level where feasible and acceptable to the user groups.

This has resulted in a design which has the bulk of accommodation over two storeys though two main areas—Elderly Mental Health and IPCU / Forensic are only single storey.

Plant areas are within roof voids which effectively extend up higher in three dedicated zones - West over Elderly, East over Rehab and Addictions and Central over Main Entrance and ECT. These higher roof areas are configured to minimise any obstruction to the sunpath for the areas on the North side of the building.





Elevations and materials

The proposed treatment for the elevations is based on a very simple palette of materials and forms which weeks to create a modern interpretation of the listed Horseshoe complex on site.

The existing Horseshoe provides a historic and dynamic frontage to the site and even once the new hospital is opened, these buildings will still be the front face of North Ayrshire Community Hospital when viewed from Kilwinning Road.
The sketches on the right are based on the latest stage of “room relationship” development on the Exemplar Design and as such reflect the currently proposed internal layouts in potential location and type of windows.

The palette of materials which have been used in these very conceptual options can be summarised in the context of each of the key building elements as follows:

Roofs: Generally all roof areas will be pitched with a “self finish” coloured standing seam metal composite roof deck. Key areas are expressed with more dynamic almost mono pitch profiles with cut outs at corners wherever the building line steps in and out.
Gutters are concealed and there are relatively wide eaves overhangs proposed and these provide good opportunities for solar shading on the sunpath and also potential rain shelter for anyone using outside spaces.

External Walls: These are generally white render with graphite grey aluminium framed windows. Feature areas (such as insets or “pod” projections for en-suites are clad – this may be timber or cladding panel and is subject to more detailed design. Some external wall areas are also proposed to be larger framed panels of window and cladding to provide identity and break down longer elevations. We have looked at the potential of colour coding these elements to offer ease of identification of the wards for patient groups for example.

The optimal balance of natural light and ventilation versus solar gain will be provided via the fenestration. The window design takes into account solar gain control requirements, with glazing elements on elevations between north-east, through south, to north-west considered for appropriate external or body tinted solar shading.

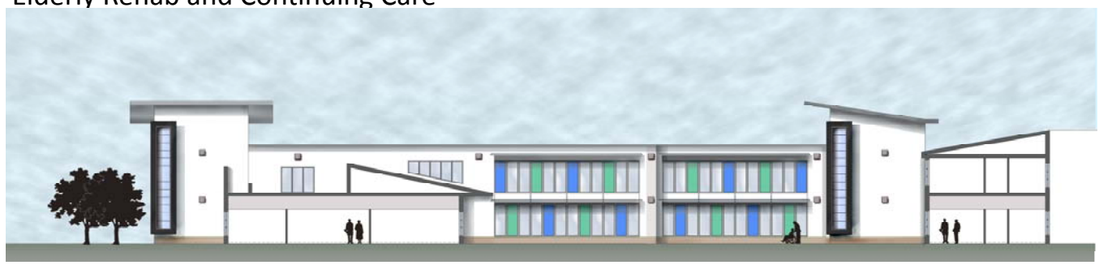
External solar control louvres are proposed where calculation may indicate they be required.

There is a base course of masonry proposed around the buildings to replicate the base course in the existing Horseshoe. Stair towers are given emphasis with distinctive glazing panels and roof profiles and this is a modern interpretation of the curved tower features in the existing Horseshoe buildings.

The “street” connecting the main ward blocks to the Main Entrance is given a more transparent treatment to reflect its circulation function and reduce the impact of appearing to be a larger built form, though coloured “glass” panels are proposed as indicated on the elevation on the right to reduce the amount of actual clear glazing on the south side of the building. The North elevation to the street is more subdued to reflect both the orientation and the fact that at ground floor level it is effectively a servicing zone on the outside.

AMH / Addictions

Elderly Rehab and Continuing Care



Hospital street front view

Hospital street back view

3.10 Accessibility

Irvine and the Ayrshire Central Hospital site are well served by local and regional transport links. As described previously the railway station is located to the west of the town centre and there are excellent road linkages via the A78, A71, A736 and A737. Local bus services are frequent and provided by Stagecoach and Western Buses and Express Routes also by Stagecoach.

Patients, visitors and staff will be arriving by a range of means from public transport, private car and ambulance, the experience of arrival is to be convenient and pleasant. The strategy to achieve this is to incorporate :

- A public transport bus stop within 20m of the new hospital main entrance –subject to detail negotiation with operators.
- A drop off and taxi rank within 20m of the new hospital entrance.
- Well lit and safe staff car parking for essential users (such as peripatetic staff) parking within a maximum 50m from the staff entrance.
- Parking within 2mins walk of the main entrance for those accompanying patients.
- General staff parking 5mins maximum walking distance from staff entrance via well lit and observed routes.
- Disabled parking adjacent to the entrances.
- Discrete entrance for emergency receipt and transfer of disturbed patients.

3.11 Impression and Ethos

The new North Ayrshire Community Hospital has an important role to play in the continuity of the historic Ayrshire Central Hospital site and as the new vibrant identity of healthcare provision for the area in the 21st century.

The NHS Ayrshire and Arran Design Statement for the project sets down some very focused aspirations in respect of what this new facility should convey to those who use it—staff, patients and visitors.

This Exemplar Design responds to the Design Statement and there are a number of aspects which require to be developed further at subsequent stages of the design process.

At this stage the layout, massing and context of the building is one which aims to make the facility and integral, important and unthreatening part of the community. From its contextual response to the history of the site through to unobtrusive integration within the landscape, the hospital will ideally create a calming and therapeutic environment which aims to alleviate stress from the moment that anyone enters the site.

The key aspects of the Exemplar Design which respond to the Design Statement are:

- The welcoming, reassuring and human scale of the development
- The Main Entrance being set back on site so as not to dominate on approach
- The Main Entrance being clearly identified with public space in front to allow ease of vehicular and pedestrian access.
- Sympathetic hard and soft landscaping with car parking integrated in radial pattern around the perimeter of the building so as to be visually as unobtrusive as possible
- Sympathy with the historic context with scale and materials to compliment the Listed Buildings on site with careful consideration of landscaping to integrate new with old.
- The maximisation of natural daylight through orientation of all accommodation, window sizing and provision of areas for roof lighting where required.
- The amenity of attractive external spaces and cafe area to add value as a community facility.
- Calm and therapeutic spaces which ease orientation to alleviate stress for all users.

3.12 Patient Experience

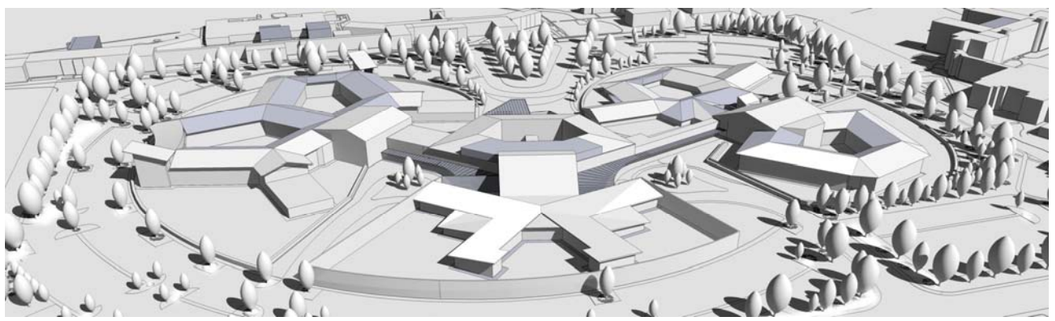
Accommodation is arranged so that patient groupings are of a reasonable social scale and segregation by gender is readily managed. When and where appropriate, patients are able to access a choice of environments giving the option of the privacy of their own room, a social communal space or an external garden space. Patients with wider access to facilities can use the whole site and areas such as the shop and cafe.

Inpatient accommodation is divided into easily managed units. Each unit is generally capable of segregating the sexes internally and also within the garden areas if required.

Patient Environment

Single bedrooms with en-suite facilities provide the balance of the patient's need for privacy and dignity against the need for unobtrusive observation. Key considerations in the design of the rooms are:

- A home like ambience, with space for personal objects and visitors.
- Maximised daylight and views and control over one's own environment where feasible.
- Inclusive Design, both from physical disability and dementia friendly perspectives.
- The view from the room and particularly from the bed will allow a view of landscape and or activity while not allowing a view directly into the room.
- En-suites in between bedrooms to maximise natural daylight and observation.
- Natural daylighting, research has linked daylight levels to patient recovery therefore bedrooms have been placed and orientated to maximise the use of available light..
- Touch down spaces, where briefed, allow a space outside the bedroom to provide a place for staff to sit unobtrusively and observe where required.



3.13 Landscaping

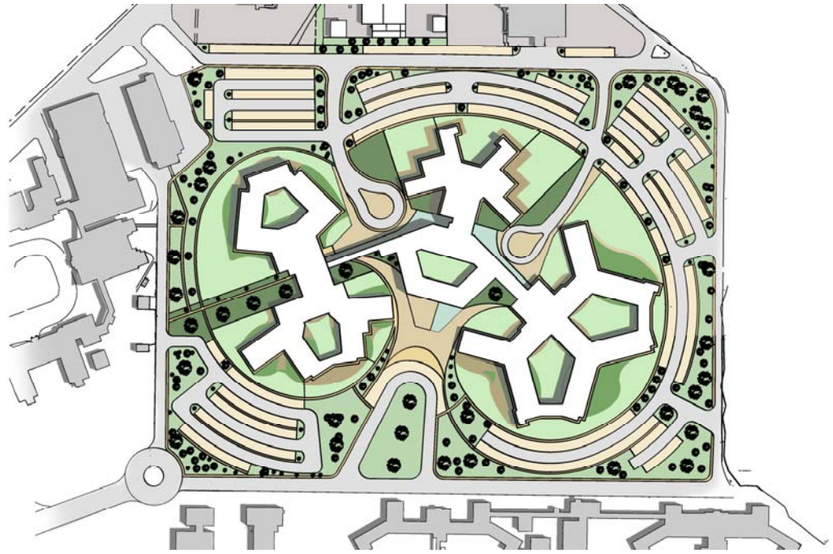
A hierarchy of landscape treatments will structure parking zones, pedestrian and vehicular circulation routes together with patients and visitor zones.

An entrance piazza is proposed at the main entrance to the new hospital and will provide a welcoming arrival experience. The entrance area will consist predominantly of hard landscaping and include signage, street furniture and lighting.

The choice of surface materials will help define the key areas and routes around the site and a hierarchy of materials will be introduced for each zone. Hard landscaping will be used to guide the activities and movements of pedestrians, encouraging and channelling direction and providing a quality and attractive floorscape in areas of pedestrian congregation.

The courtyards are enclosed, or partly enclosed, by the ward blocks and are open to the elements and are accessible at both ground floor and also first floor and will be designed to meet the specific needs of patient groups. These will create sheltered, calm and restful environments which are non-threatening.

All landscaped areas will be designed to be easily maintained and this includes access provision to courtyard areas.



3.14 Fire Strategy

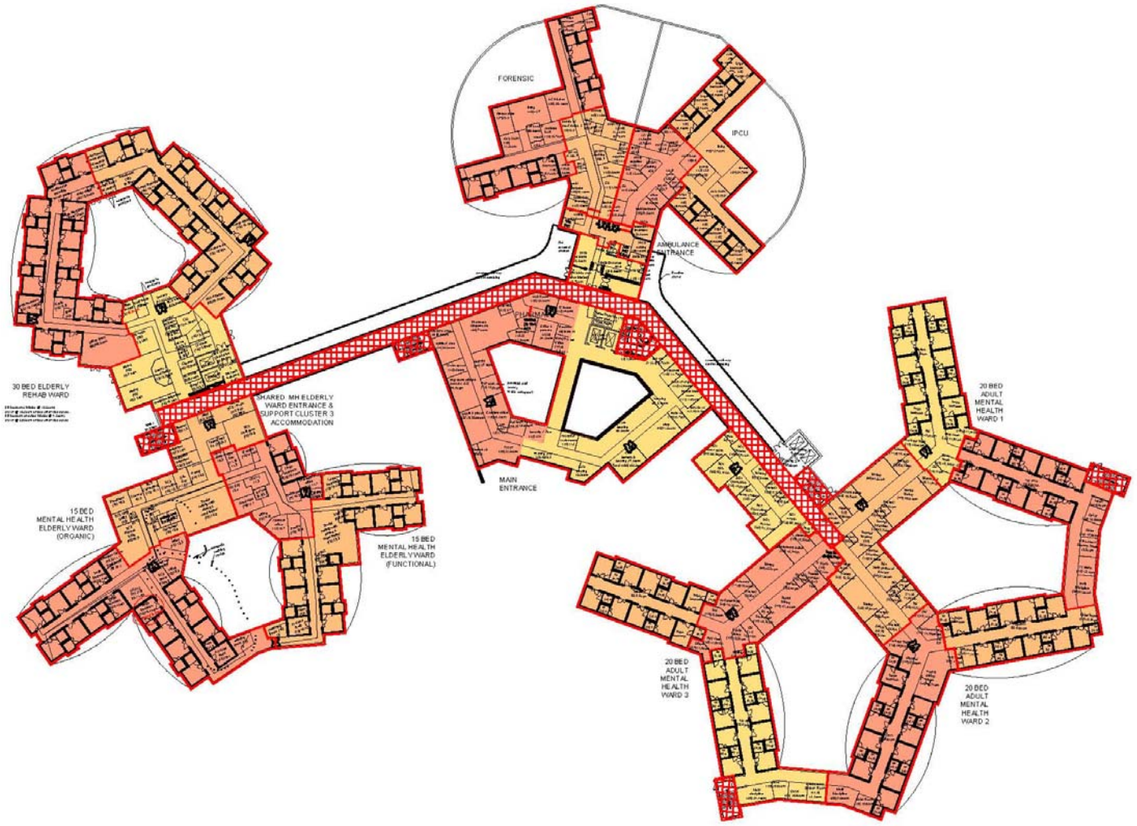
3.14.1 Background / Purpose of Report

This draft document has been prepared to summarise the fire strategy intended for the proposed North Ayrshire Community Hospital, proposed escape routes and methods of escape given the likely usage of the various building elements.

It should be noted that at this stage of the design the purpose and use of each room and zone within the building have essentially been determined, although some assumptions have been made with regard to occupancy levels and dependencies.

It is also noted that the alternative route of compliance in respect of fire strategy available to the design team by carrying out a bespoke fire engineering strategy may be investigated at a later date but this initial report will highlight the issues which have been addressed in respect of the building design in order to meet or exceed the standards detailed in the Building Standards Division (formerly Scottish Building Standards Agency) Non Domestic Technical Handbook, NHS Firecode SHTM 81 (July 2009), Fire (Scotland) Act 2005, Fire Safety (Scotland) Regulations 2006, BS 9999 and Scottish Government Health Directorates. If it is proposed at a later date to adopt a fire engineering or alternative approach, this should be clearly identified and approved by the Health Board Chief Executive as required by SHTM 81 before proceeding.

Due to the conflicting requirements between fire safety and nursing care, further ongoing discussion will be required between the design team, NHS Ayrshire & Arran's Fire Safety Advisor, the local Fire and Rescue service and the enforcing authority to ensure the Fire Strategy Plan meets the requirements of all relevant bodies.



3.14.2 Building Design Summary

The building consists of a central corridor or "hospital street" from which each department's accommodation is accessed. These comprise day spaces, patient bedrooms and ancillary accommodation each of which will be constructed as separate compartments that will be subdivided into sub-compartments within.

Each of these ward zones will have approximately 30 bedrooms, dayspaces, treatment rooms, stores, service cupboards, etc. Each zone will have direct access to the hospital street and further exits to the external air.

All building areas which are two storey will have escape stairs from the upper floor levels. The escape stairwell enclosures will provide escape to the external air at ground level. Additional stairwells will provide vertical escape from the first floor level of the first sub compartment of the hospital street to ground level allowing further escape in two directions to a further compartment or to the external air.

It will be necessary to fully determine the dependencies of the patient groups in each zone of the building and a Management Fire Strategy will require to be developed by NHS Ayrshire & Arran in order to safely evacuate patients from a zone of fire origin depending on the dependency levels of those patients therein.

Patients will be categorised as either “normal dependency” or “very high dependency”. Very high dependency patients include those whose clinical treatment and/or condition will create a high dependency for staff eg. the Intensive Therapy Units, enclosing those with severe mental illness, which will require specific arrangements to provide assistance with their escape.

The fire strategy of the proposed North Ayrshire Community Hospital has been designed on a scheme of progressive horizontal evacuation. This, coupled with a robust Management Fire Strategy prepared by NHS Ayrshire & Arran will allow patients to be evacuated safely to an adjacent compartment or sub compartment, appropriately fire protected from the compartment or sub compartment of fire origin, whilst maintaining a future opportunity for further evacuation depending on the severity of the risk, should the requirement arise to evacuate the entire storey.

It has also been important to implement a design that minimises the possibility of fire between patient access areas and non patient access areas by the appropriate separation of these conflicting zones.

3.14.3 Evacuation Management Strategy

It is important to appreciate that the immediate and complete evacuation of the entire hospital in the event of fire will be generally not possible and as such the design has allowed for progressive horizontal evacuation as described in SHTM 81. This however must be in conjunction with an appropriate and robust evacuation management strategy which takes the building design, staff provision and patient condition into account.

Many patients, dependent on clinical condition, mobility or ability, who may be affected by a wide range of impairments, not only will be unable to negotiate escape without assistance but may be unable to be evacuated easily at all, such as those requiring permanent connection to medical equipment etc.

As required by the Fire (Scotland) Act 2005, NHS Ayrshire & Arran will require to complete and implement an appropriate Fire Safety Policy and Management Fire Strategy that :-

- Integrates static and dynamic fire safety provisions and evacuation plans
- Is supported by adequate staff numbers both day and night
- Is supported by a comprehensive system of fire safety training
- Is based on a system of fire risk assessment
- Is subjected to a periodic and comprehensive fire safety audit

3.14.4 Compartmentation

The provision of compartments and sub compartments to facilitate progressive horizontal evacuation have been designed in accordance with SHTM 81 and are limited in size and configuration to allow safe evacuation of patients to an adjacent compartment through a barrier of specific fire integrity to afford that protection.

In the ward zones proposed, each sub compartment will always allow evacuation to an adjacent sub compartment in either direction or evacuation from the storey to an adjacent compartment (the hospital street) or out to the external air by one of the final exit routes. (Fig 4.) The 2 storey elements of the building are also compartmented horizontally within the floor zone in order to afford protection to occupants on storey above or below.

Compartments are limited to max. 1500m2 in area, with each compartment further divided into sub compartments of max. 750m2 to provide further short term protection from the fire origin. Compartmentation will be achieved by walls/doorsets and floors with a medium (60 min.) fire resistance duration and sub compartmentation by short (30 min.) fire resistance duration.

It is also necessary to ensure that the distance between protected doorsets to compartment or sub compartments are within the permissible travel distances. Other than within individual rooms, all points throughout the building will have 2 No. directions of escape and therefore the maximum permissible travel distance is 32m. Each room with a single exit door will require to be limited to a dimension that will limit the distance from any part of the room to the exit door to 15m. (Fig 5.)

3.14.5 Smoke Control

The compartments and sub compartments in each zone will be further protected from the spread of smoke between rooms or within corridor spaces by the installation of doorsets to inhibit the spread of smoke and by the suitable detailing of service ducts and voids. Corridor lengths will be limited by the installation of automatic smoke control doorsets. (Fig 6.)

The automatic smoke control doorsets to the corridors may be continuously held open with a magnetic locks which are connected to the fire alarm system. These would release and allow the doors to close in the event of fire alarm activation. Alternatively they could normally remain in the closed position but opened by a localised movement sensor.

3.14.6 Fire Escape Provision

Whilst the fire safety strategy implemented in the proposed building is one of progressive horizontal evacuation, under certain circumstances it may be necessary to evacuate a zone, entire storey or in extreme circumstances, the building in its entirety.

It is therefore necessary to incorporate escape routes and stairwells within permissible travel distances to allow evacuation from the building to a place of safety in the external air for both the single storey elements and from the upper storey of the two storey sections to a ground floor storey exit directly to a place of safety.

These escape routes / stairwells will be assigned to allow evacuation of all occupants irrespective of condition including bedridden patients if absolutely necessary, details of which will all require to be specifically detailed in the Management Fire Strategy by NHS Ayrshire & Arran.

Where vertical escape may be necessary, there will be a primary option of mattress evacuation stairs. These mattress evacuation stairs will be included at storey exit arrangements in order that in the event of a fire in any of the ward zone sub compartments, progressive horizontal evacuation could be made to an adjacent sub compartment closer to an escape stair lobby thus allowing further evacuation of patients into the stair lobby for vertical evacuation if deemed necessary.

It should be noted that based on the current clinical brief. It is anticipated that there will not be any “very high dependency” patients on the first floor level ward zones and therefore mattress evacuation provision from these areas may not be strictly necessary; however, cognisance has be taken of the potential requirement should the ward zone requirements change or a full evacuation of the hospital be required. It should also be noted that SHTM 81 allows for the use of escape bed lifts and should these become part of any future fire strategy, the requirements for these in SHTM 81, SHTM 2024, and SFPN 3 should be met.

Consideration will also require to be given to the available refuge area in each sub compartment and to the escape lift lobby, this is dependent on the number of patients that will evacuate horizontally from adjacent sub compartments and the number of patients that will require to utilise the escape stairs as a means of evacuation from the storey. Each sub compartment circulation area will require to be able to accommodate the patients from its own rooms and those of the sub compartments adjacent.

As per the requirements of the Fire (Scotland) Act 2005, it is noted that the proposals cannot make an assumption of the fire service being in a position to assist in the evacuation of patients at the required time of evacuation and the design should therefore anticipate staff having to co-ordinate patient evacuation to a place of safety. This must be incorporated into the NHS Ayrshire & Arran Fire Safety Policy and Management Fire Strategy.

3.14.7 Hospital Street

The “Hospital Street” provides the main circulation route between the individual ward zones of the building. It facilitates the transfer of patients and staff between zones and departments both horizontally and vertically and provides additional means of escape from each zone or compartment. (Fig 7.)

The hospital concourse will be divided into sub compartments in order to inhibit the spread of fire and to provide further protection during evacuation.

3.14.8 Evacuation Plan / Staffing Levels

The Management Fire Strategy prepared by NHS Ayrshire & Arran will provide detailed information on the evacuation of patients, staff and public from all areas of the hospital. This is dependent on occupancy levels, configuration of compartments or sub-compartments, mobility and condition of occupants and staffing levels available.

In particular, the enhanced levels of staff assistance required in the event of horizontal and/or vertical storey evacuation for high dependency patients will require to be incorporated. The provision of adequate members of staff with suitable fire safety training in each department should be assessed and the presence of an adequate number of suitably trained staff will be vital to the safe evacuation of each sub compartment.

3.14.9 Specific Areas of Fire Hazard

Apart from measures taken to minimise conflict between patient access and non patient access areas, it is important to ensure that rooms and departments deemed “high hazard” in terms of high fire loads or significant ignition sources do not adjoin, either horizontally or vertically, the “very high dependency” patient access areas. These should incorporate automatic fire control systems when adjacent to “normal dependency” patient access areas. Additional requirements will be necessary for those areas deemed “places of special fire risk”.

The fire hazard rooms which should never directly adjoin a very high dependency area are a boiler house, central stores, commercial enterprises, flammable stores, laundry, main electrical switchgear, main kitchens, refuse collection and incineration and a works department. Those rooms which have had to avoid adjoining a very high dependency area to negate the need for a fire suppression system are central staff change, central sterile supplies, hospital sterilising and disinfecting unit, health records, pathology unit and manufacturing pharmacy.

It is not anticipated that any “high hazard” rooms or departments will be located adjacent to any patient access areas in the current proposals and hence no fire suppression systems would be required.

3.14.10 Communications & Escape Installations

Automatic detection, manual call points, and sounders/beacons shall be provided throughout the facility and shall comply fully with the recommendations contained within the relevant fire code and BS5389 Part 1 and shall be category L1. The design shall also satisfy the requirements of the local Fire Officer and Estate Fire Officer.

Further information on the fire detection and alarm system including call points, sounders, fire fighting equipment, hydrants, signage ironmongery, emergency lighting etc. will be developed at a later date.

3.15 Acoustic Strategy

3.5.1 Introduction

This section addresses the relevant requirements of the technical brief and sets out the strategy to achieve compliance where possible. The strategy identifies the criteria to be addressed and the relevant checks as required by SHTM 08-01 Specialist services—Acoustics which is the relevant guidance document applicable in Scotland.

There was no specialist acoustic advice taken during the development of the Exemplar Design, though the design has been developed in cognisance of the requirements of SHTM 08-01 where possible and allowances for adequate partition construction for example are included within the as-drawn areas.

SHTM 08-01 has been written for healthcare professionals to understand acoustic requirements and to help those involved in the development of healthcare facilities.

Acoustic design is fundamental to the quality of healthcare buildings. Sound affects us both physiologically and psychologically both through the introduction of unwanted noise and also the more beneficial effects of music for example.

Good acoustic conditions improve patient privacy and dignity, and promote essential sleep patterns. Such conditions are key to healing. Good acoustic design brings other benefits in terms of patient and staff comfort and morale, as well as improved efficiency and usability of equipment.

The relevant acoustic design parameters and the standards to be achieved are set down in SHTM 08-01. The parameters relevant to the new North Ayrshire Community Hospital are:

- noise levels in rooms – both from mechanical services within the building and from noise coming from outside. It is important to create an acoustic environment that allows rooms to be used for resting, sleeping, treatment, consultation and concentration. There are also statutory limits for noise levels that individuals can be exposed to whilst working; which should be adhered to;
- external noise levels – noise created by the healthcare building and operation should not unduly affect those that live and work around it;
- sound insulation between rooms – allows rooms to exist side by side. Noisy activities should not interfere with the requirements of adjacent rooms, and private conversations should not be overheard outside the room.

The guidance given now allows for raised voices being commonly expected for hearing-impaired patients and staff;

- impact sound insulation – prevents footfall noise of people walking over rooms interfering with the use of rooms below;
- room acoustics – guidance is given on quantities of acoustically-absorbent material to provide a comfortable acoustic environment;
- audio systems – announcements to patients, visitors and staff should be intelligible;
- vibration caused by plant, medical equipment and activities should not affect the use of the building. Some medical equipment is sensitive to vibration, and so are people.

NHS National Services Scotland

Scottish Health Technical Memorandum 08-01:
Specialist services
Acoustics

Health Facilities Scotland
Engineering and Environment

May 2011

Checklists

The following are an initial check of the most important acoustic issues considered relevant to this project, but are not intended to be an exhaustive list. Comments are highlighted in italics where relevant.

Planning Check

- Vibration-sensitive equipment is located away from sources of vibration and structures with appropriate vibration characteristics. *Any detail issues to be reviewed at next stage.*
- Energy centre, generators, service yards, delivery areas are located away from sensitive areas within and outside the site boundary. *Energy centre and associated servicing is remote. Primary deliveries to elsewhere on site with FM access timetabled to not affect sleep times.*
- Noisy roof plant is not over sleeping areas, and noise to atmosphere outside the site is appropriately controlled. *Main plant areas not over bedroom wings.*
- Waiting areas are not next to doors into 'private', 'confidential' or 'sensitive' areas. *Appropriate separation in room relationships.*
- 'Sensitive' or 'medium sensitivity' areas with openable windows are located away from noisy areas or areas where external seating is provided. *Appropriate separation in room relationships.*
- Heavily trafficked corridors are not above sensitive spaces. *Appropriate separation in in departmental and room relationships.*
- Interconnecting doors between private areas are avoided. *None anticipated unless for clinical reasons.*
- Noise-sensitive accommodation is under a roof that will adequately control rain noise. *Specification to be reviewed at next stage.*

Internal acoustics Check—*Specification issues for next stage*

- There is adequate sound-absorption provision in all occupied spaces.
- Ceiling tiles are sufficiently absorbent and cleanable.
- Sound-absorbent materials used in acoustic treatments have encapsulated acoustic materials where necessary.
- Sound absorption is provided in patient areas where this does not conflict with cleaning and maintenance strategies.
- Absorption is provided around nurse stations to minimise noise transfer.

Internal sound insulation and privacy Check—*Specification issues for next stage*

- 'Confidential' or 'private' rooms with openable windows are located and designed to minimise sound directly reflecting into other open windows.
- External areas near openable windows in 'private', 'confidential' or 'sensitive' rooms are not easily accessible from outdoors.
- Crosstalk via ducting has been controlled.
- Noise transmission via flanking elements has been controlled (for example, internal linings on external walls are not continuous between rooms.
- Partition junctions have been designed to minimise flanking.
- Full-height partitions (that is, to the soffit) have been provided where required.
- Sources of structure-borne sound are adequately controlled.
- Sound-masking has been considered for high-privacy areas, with adjustable volume in multi-bed wards.
- Potential conflicts for door requirements have been considered and resolved.
- Waiting areas are not immediately outside 'confidential' or 'private' rooms.
- Acoustic doors are operable by disabled users.
- Impact noise has been controlled where necessary.

Services noise Check—*Specification issues for next stage*

- There is adequate attenuation of ventilation system noise to internal areas.
- There is adequate attenuation to meet external noise limits with all plant operating.
- There is adequate attenuation to deal with start-up noise.
- Balancing can be accomplished without excessive noise.

- Resilient fixings are used for plumbing fittings on lightweight walls around sleeping areas.
- Attenuators and other in-duct acoustic treatments for clinical areas have fully bagged acoustic material if required.
- Lifts are located away from sensitive areas.
- Transformers are located away from sensitive areas and sufficient controls on structure-borne noise are incorporated.
- Blow-down attenuators, boiler-flue attenuators and burner shrouds have been provided to control noise from boilers.
- Plantroom noise levels are below thresholds for hearing protection and, where this is not reasonably practicable, adequate warnings have been provided.
- Noise from rainwater and waste pipes is controlled so that sensitive areas are not adversely affected.

Structural vibration Check—*Specification issues for next stage*

- The structure has been designed to meet the required vibration levels from footfalls and other vibration sources.
- Vibration in a non-sensitive space (for example corridors) does not cause excessive vibration in a nearby sensitive area.
- Equipment is properly isolated from the structure.
- Provisions have been made for very sensitive medical equipment.
- Fit-out equipment Check
- Equipment noise does not adversely affect the use of the room.
- Metal bins incorporate quiet closing methods and damping Internal cooling fans for electronic equipment are of the low-noise type.
- Internal cooling fans for electronic equipment are of low-noise type.
- Water coolers are of the low-noise type.
- Provision has been made for the control of noise from bedpan washers, macerators, sluices etc.
- Door-closers minimise noise generation.

Management issues Check—*Operational and specification issues*

- Noise from nurse stations during changeovers has been considered.
- Quiet nurse-call systems have been considered.

Design Development

The above requirements, in conjunction with the more detailed technical aspects of SHTM 08-01 , should be adhered to in the developing design.

The departmental relationships and room relationships progressed to date have been done to achieve optimal clinical dependencies for this stage of design development.

On the basis of the current Exemplar Design, it is not anticipated that the departmental relationships will substantially change, though the room relationships are likely to change through user group consultation.

Detailed specifications have not been developed at this stage, though these will be at the next stage of Design Development and will address the various design and technical performance requirements set down in the relevant briefing documentation and Employer's Requirements.

3.16 Architecture and Design Scotland

From the 1st April 2010 an assessment of design quality hasl become part of the business case approval process under the Scottish Capital Investment Manual (SCIM) dated 20th April 2009.
This guidance describes:

- how design standards should be established for projects,
- the Board's role in assessing progress in achieving design standards ,
- the design assessment process,

submission requirements at each business case stage.

- The Scottish Government Health Directorates' purpose in developing and implementing this process is to
- ensure that the outcomes of development projects meet the Government's objectives and expectations for
- public investment. Mapping design into the business case is intended to improve the level of design quality
- achieved across NHSScotland and the outcomes realised through this.

It was previously agreed that the new North Ayrshire Community Hospital would be a pilot project for the initiative and a Design Statement was prepared for the project.

The development of a Design Statement is intended to assist NHSScotland Boards in using good design to get the most out of their development projects. The Design Statement is a means of setting out the Board's objectives in a series of agreed statements of intent and then defining a benchmark for how the physical result of the project will help deliver those objectives. The benchmarks should not require a pre-determined design outcome, but provide a view of what success might look like. The third part of the Design Statement is a plan of action for how the objectives and benchmarks established for the project will inform key decisions throughout the project including the development and consideration of the business case, and the eventual evaluation of the project's success.

The originally developed Design Statement was unrevised prior to the development of the Exemplar Design and as such was used as a benchmarking tool by those involved in the evaluation of proposals. Architecture and Design Scotland (A+DS) were again involved in the stakeholder consultation process during the development of the Exemplar Design and a report was prepared in early October 2011 as part of their input. The project has been "supported" with a serious of both Essential and Advisory recommendations. The report forms part of the Outline Business Case submission and is therefore not included as part of this report. It should be noted, however, that since the report was written, the design has progressed further and the various recommendations have been used as the basis for some of the additional design development progressed up to the date of this Stage C report.

3.17 Statutory Approvals

3.17.1 Planning - Summary of approach

Under the current planning system the NACH proposal is classified as a "major" development and as such will be the subject of detailed and thorough scrutiny by North Ayrshire Council (NAC) as planning authority.

The proposed development and planning application will also be the subject of the procedural requirements relating to "major" applications such as the minimum12 week pre-application community engagement exercise.

During the previous stage of development of the new North Ayrshire Community Hospital under Frameworks Scotland, a number of meeting were held involving representatives of the PSCP, NHS Ayrshire and Arran and North Ayrshire Council. This dialogue has been more recently continued directly between NHS Ayrshire and Arran and North Ayrshire Council.

Following an early meeting with officials from various NAC Departments on 29th March 2009 the planning officials issued a Briefing Note confirming the principal planning policy and development management issues relating to the proposed development. This confirmed that in terms of the adopted North Ayrshire Local Plan the overall Kilwinning Road site is overlaid by a residential "wash" or zoning rather than a healthcare zoning. As such, the officials indicated that the proposed NACH project would fall into the category of "uses which do not conform to the land use allocation in the Local Plan, and which are not expressly provided for by any policy in the Plan." The officials have advised that a comprehensive case will accordingly require to be provided in support of the proposed development addressing these Local Plan issues and demonstrating "a proven need for the development and a resultant economic, environmental or community benefit arising from the development; that no suitable alternative site exists within appropriately allocated land; and that the nature of the proposal is compatible with and sympathetic to the character of the surrounding area".

Another key requirement of NAC is that the proposed hospital development is considered in the context of the wider, overall Kilwinning Road site. In particular, the officials require a site-wide Masterplan to be submitted with the planning application for the NACH development. The site-wide Masterplan will require to demonstrate that the principles of the longer term developments on the balance of the site can be accommodated in association with the NACH proposals. The potential overall impacts have also to be addressed.

Given the previous uncertainty of NHS Ayrshire & Arran about the future use and development of the balance of the site it has been agreed with NAC Planning and Roads Departments that 4 potential development options should be considered for the balance of the site - ie all healthcare, all residential, mixed development. It was also agreed that a single application for detailed planning consent would be submitted for the NACH project supported by the overall site Masterplan. No formal application would require to be submitted for the balance of the site. Full technical assessments and appraisals to be

carried out for the NACH development, with lesser scale appraisals carried out for the balance of the site.
Sketch proposals illustrating the above masterplan options were previously developed under the PSCP and submitted to NAC. It is currently understood, however, that a single masterplan preferred option is seen as a more robust way forwards with wider development proposals.

3.17.2 Building Control - Summary of approach

There have been no significant discussions held with North Ayrshire Building Control regarding the project – either under the PSCP or since.
The Exemplar Design has been developed on the basis of full compliance to date. The Fire Strategy for example highlights many of the fundamental issues to be addressed as part of the Building Warrant Approval process.
It is imperative that a robust framework for the development of the detail design is set down and including the methodology for Building Warrant approval relative to programme and procurement and any associated sign-off requirements.

3.18 Summary and Recommendations

The Exemplar Design has been developed beyond departmental adjacencies to room relationship level and is effectively now at 1:200 scale. The room relationships generally follow the principles of department analysis and ward design detailed in sections 3.5 and 3.6.

It should be highlighted that the 1:200 room relationship layouts have not incorporated any stakeholder group comments at this stage, and their primary function was to further justify the drawn GIFA as viable. The layouts are, however, based on the sub departmental relationships which were broadly agreed through the user group meetings which did take place. There has been limited overall design team co-ordination of proposals and therefore duct risers for example will still require significant development at the next stage with potential associated impact on layouts.

Given the lack of stakeholder input to the development of the more detailed layouts applicable to the Exemplar Design, there has been a review carried out to highlight the key issues which should be addressed as early as possible in the next stage of the process.

The Schedule of Accommodation applies a planning percentage of 5% and a cumulative engineering percentage of 3% to the original briefed area. This total has been used as guidance when drawing the room areas. This schedule highlights drawn areas which are either 5% above or below this adjusted briefed area. Cells shaded red indicates drawn areas 5% and less below this area; green cells highlight those 5% and more above.

This section identifies the next stages for further development within each department if the current Exemplar Design is taken to the next level of detail.

It is therefore not intended to highlight every variation from the brief as detailed in this appendix, but to identify in each department:

- Areas where the brief may be subject to further change
- Areas currently drawn slightly below original briefed areas (ie without the planning or engineering percentage adjustment)
- Rooms which may require further clarification as to the equipment required, or an equipment layout to verify the briefed area scheduled is adequate for purpose.

MAIN ENTRANCE & PHARMACY

- Develop forms and facade design at Main Entrance with Consulting/Intervention area above with view to increasing double height areas and the transparency between the foyer arrival point with views through to the courtyard.
- Consider potential Staff access to courtyard (west).
- Potentially swap Pharmacy accommodation with Spiritual Area so this is a more obvious location off main entrance but in quiet location. (Opposite lifts).
- Develop garden space to Spiritual area.
- Develop design for all external areas and show integration with Main Entrance accommodation e.g Cafe/Courtyard area.
- Establish number of cubicles etc. within Male and Female WCs to be identified to develop equipment layouts and verify areas briefed are functional.

IPCU & FORENSIC

- Partition Construction to be specified to fully assess impact on drawn areas.
- Consider security to external areas to be established if a 5m plus height wall is required. Develop design to reduce impact of its appearance using landscaping.
- The Fitness Suite in Forensic Dept is currently accessed from living area. This may be acceptable given potential for increased supervision but may require own access and re-configuration of this area.
- Staff Office (IPCU) is drawn slightly under briefed area.
- Briefed area – 10.5sqm; Drawn Area – 10.4sqm; Suggested (with planning & engineering mark-up – 11.36sqm)

AMBULANCE ENTRANCE

- Combine Foyer & Waiting Area (Waiting area currently drawn slightly under briefed area):
- Briefed area – 9sqm; Drawn Area – 8.6sqm; suggested (with planning & engineering mark-up – 9.7sqm).
- Request (from clinical rep) for emergency staff car parking here, or at central FM entrance.

TRIBUNAL

- No areas of concern. There is potential to provide more M&E Duct area locally if required.

CONSULTING/INTERVENTION

- Records area slightly under briefed area (8sqm). Drawn at 7.8sqm.

ECT

- Recovery Area II requires development of equipment layout and clarification of equipment required to confirm briefed area is adequate.
- Reception Area currently drawn under briefed area (16sqm). Drawn at 14.6sqm.
- Office currently drawn under briefed area (12sqm). Drawn at 10.9sqm. Adjacent Observation area is over briefed area and it is expected that this would be resolved at the next level of development.
- Trolley Bay currently drawn under briefed area (4.5sqm). Drawn at 4.2sqm.

MH ELDERLY – 15 BED WARDS

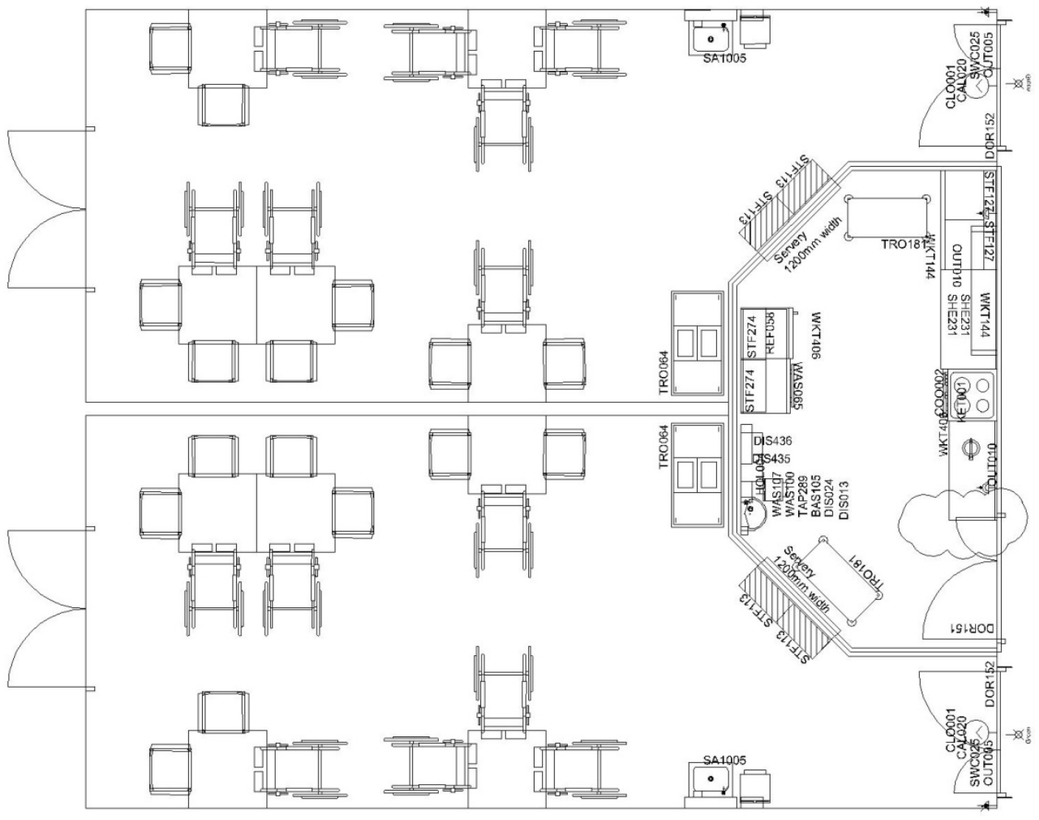
- Support Cluster 3 Accommodation: reconfigure to form separate block and review impact. Review all SC3 Accommodation to see if some serves a particular elderly ward and re-configure as necessary.
- Develop design for all external areas, clarify security requirements, and show integration with internal accommodation.
- Consider the requirements for Assisted Bathrooms in the exemplar design and possible alternative provision (for example larger Assisted Shower rooms).
- Consider increasing size of patient WC's in day areas to accommodate dual access, if patient bedroom ensuites are too far for patients to use.

ELDERLY REHAB – 30 BED WARD

- Treatment Room Equipment Layout to be developed to confirm elongated shape will work.
- Develop detail of FM access and how it will have dual function as Quiet Room area.
- Quiet Room area has been split – Brief requests one area @ 30sqm.
- Re-introduce small sitting places along bedroom corridors for patients to rest if possible (and also to help define these areas to ease way-finding).
- Establish if Support Cluster 3 accommodation embedded within this ward is appropriate to patient/staff use.
- Dining/Pantry areas are drawn to briefed area only. Equipment layout has been produced but Equipment List requires to be confirmed by users.

Explore possibility of open plan dining areas, and/or extending open plan area to day spaces to increase flexibility.

- Preferred location & size of meal trolley to be advised.
- Consider increasing the size of patient WC's in day areas to accommodate dual access, if patient bedroom ensuites are too far for patients to use.



Sketch layout proposed:

ELDERLY LONG TERM CARE – 30 BED WARD

- Treatment Room Equipment Layout to confirm elongated shape will work.
- Quiet Room area has been split – Brief requests one area @ 30sqm. One of the Quiet Rooms is located in a busy ward area.
- Re-introduce small sitting places along bedroom corridors for patients to rest if possible (and also to help define these areas to ease wayfinding).
- Establish if Support Cluster 3 accommodation embedded within this ward is appropriate to patient/staff use.
- Develop design for external areas and show integration with internal accommodation.
- Consider the requirements for Assisted Bathrooms in the exemplar design and possible alternative provision (for example larger Assisted Shower rooms).
- Areas slightly under -

  Dining/Pantry areas are drawn to briefed area only. Equipment layout has been produced but Equipment List requires to be confirmed by users.
- Sketch layout is as per Elderly Rehab proposals and the preferred location & size of meal trolley is to be advised.
- Explore possibility of open plan dining areas, and/or extending open plan area to day spaces to increase flexibility.
- Consider increasing the size of patient WC's in day areas to accommodate dual access, if patient bedroom ensuites are too far for patients to use.

ADULT MENTAL HEALTH – 20 BED WARDS

- On the outside wards, the office is accessed from within Duty Room and is an awkward shape. User consultation and equipment layout required.
- Distressed Rooms are immediately adjacent to main social sitting areas on the two outside wards.
- New shared Reception/Waiting areas subject to user approval.
- Assisted Bathroom awkward shape – equipment layout required.
- Preferred location & size of meal trolley to be advised.
- Develop design for external areas and show integration with internal accommodation.
- Reducing 8 No ensuites within each ward to 4sqm compromises future flexibility as they are under area to function as dual access.

REHAB – 30 BED WARD

- The one person office is accessed from within Duty Room and is an awkward shape. User consultation and equipment layout required.
- Two meal trolley bays currently briefed but only one pantry room. One meal trolley bay not currently drawn.
- Reducing 12 No ensuites within this ward to 4sqm compromises future flexibility as they are now under area to function as dual access.
- Areas slightly under -
  - Staff base: Briefed area – 12sqm; Drawn Area – 11.6sqm; suggested (with planning & engineering mark-up – 12.98sqm).
  - Social Sitting areas:
  - Self Catering Kitchen areas: Briefed area –2 x 22sqm; Drawn Areas – 22.6sqm & 21.10sqm total; suggested (with planning & engineering mark-up) – 23.79sqm in each kitchen. Equipment layout required to establish that drawn areas are adequate.

ADDICTIONS – 10 BED WARD

- Resolve ensuites within 4 bed cluster with AMH footprint below.
- Would be desirable to retain previously briefed distressed room but not currently drawn.
- Reducing 2 No Ensuites within this ward to 4sqm compromises future flexibility as they are now under area to function as dual access.

SUPPORT CLUSTERS

- Support Cluster 3 to undergo full review to establish if shared facilities are in their optimum location for the patients they serve. Consider removing all Support Cluster Accommodation within MH Elderly Wards and impact of re-configuration.
- Disposable rooms: equipment details of bins etc. required to verify areas briefed are adequate for all domestic, clinical and recycling storage.
- Some store rooms under briefed area. Significantly so in Support Cluster 3.

Waiting area slightly under area in Support Cluster 3. Briefed area 9sqm; drawn area 8.5sqm.

OTHER CONSIDERATIONS:

- Consider charging stations for patient's technological equipment.
- The lack of clinical handwash basins within some MH bedrooms may pose a challenge with regards to infection control if conducting examinations and invasive procedures in these areas. Clean Utility area may require review to accommodate such procedures.

SUMMARY

As stated in the introduction to this section, most of these proposed recommendations are with respect to the Exemplar Brief, and in some cases exclusively so. This detail is intended to highlight areas that can be improved within the Exemplar Design, or may be subject to further briefing and design development.

Section 4: Infrastructure, Structural & Environmental

4.1 Introduction

1.1. Purpose of Document

4.2 Infrastructure Strategy

2.1. Roads and Transportation
2.2. Public Transport
2.3. Estate Traffic Management
2.4. Parking Strategy
2.5. Pedestrians and Cyclists
2.6. Drainage and SUDS
2.7. Flooding (fluvial & pluvial)
2.8. Site Levels and Profiling

4.3 Structural Engineering Strategy

3.1. General
3.2. Foundations and Substructure
3.3. Superstructure

4.4 Environmental Strategy

4.1. Environmental Design Support
4.2. Constraints Analysis
4.3. Support to Design Evolution
4.4. Ecology - Planning and Mitigation

4.5 Environmental Impact Assessment (EIA)

4.6 Flood Risk Assessment

4.1 Introduction

4.1.1 Purpose of Document

This document refreshes the previous report and studies carried out on behalf of NHS Ayrshire & Arran in June 2010.

The report outlines the anticipated approach to be employed in the engineering design and environmental consultation, based on the scheme layout developed by Core Associates and current at the time of reporting, in the following areas:

- Infrastructure Strategy, including transportation, site access, drainage & flooding
- Structural Strategy, including sub-structure and superstructure
- Environmental Strategy, including the approach to environmental team integration and key follow-on actions for ecology surveys.

4.2 Infrastructure Strategy

The Infrastructure Strategy consists of the co-ordination of separate but inter-related elements that combine to facilitate development.

Individual elements of the overall strategy are outlined below, with cross-references to other parts of a group of elements which inform the infrastructure strategy. As such, in the development of individual elements, as more definition is obtained, the dependant and related elements will also be updated.

To monitor this process, one or two key individuals within URS would undertake an overview and maintain an overall understanding from frequent involvement and review of all the constituent parts of the infrastructure strategy.

4.2.1 Roads and Transportation

The road network to support the development will work at two levels. Externally, looking at the linkage to the existing major road network and the effect of the development on that network, and internally in the formation of a road system which meets the varying needs of each facet of the Campus.

Looking to the 'external' elements firstly, the following will be covered :-

- The capacity and operation of the existing road network around the site may be a constraint to development, and URS were commissioned to undertake a Transport Assessment (TA) to support Planning and determine an appropriate level of mitigation measures, such as off-site junction upgrading works, etc. The TA has been undertaken up to the stage of initial modeling/simulation. URS are aware further modeling scenarios require to be under taken separately, presented to the Roads Authority and the TA completed.
- The Planning Authority require a masterplan to be submitted as part of any future Planning submission, the masterplan including the NHS site for disposal must be accounted for in the TA.
- As part of the TA, URS undertook a scoping assessment in 2010 which at the time was agreed with NAC together with the extent of junctions to be examined. The proximity of the Trunk Road network resulted in further consultation and review with Transport Scotland (TS). The scoping assessment has also received approval in principal from TS. These approvals, at local and national level, shall be revisited.
- Early indications emerging from the TA undertaken by URS, suggest that without mitigation, the existing public road network is constrained mainly as a result of growth and committed development. Development traffic from the new hospital and retained estate slightly increase the traffic flows further. There requires to be further liaison with NAC Roads to determine the proportion of off-site junction mitigation, if any which may be attributable to NACH.
- Closer inspection of the traffic model should also be undertaken in order to introduce nominal measures on existing junctions local to the wider Ayrshire Central Hospital (ACH) site, which may offer a rationalised approach to overall junction mitigation, again in consultation with NHS and NAC.

Internally, the initial aspects for the developing strategy to consider are emerging :-

- Local to the site, the current access strategy looks to close off the existing access, which aligns directly with the "Horse-shoe" buildings, and create a new, fit for purpose, access further south. The arrangements for access will be reviewed early in the masterplan process, in conjunction with the requirements for service vehicle access.

  This new access will provide enhanced geometry, fitting to the new development. The exact form and the interactions at Kilwinning Road will be developed and assessed as part of the Transport Assessment. Subject to NHS direction, the opportunity exists to potentially consider a secondary access point at the existing North access, via a 'left in' turn only or similar measure. Again this would require to be modelled, and benefits/control measures clarified with NAC Roads. Also to consider in the context of the wider masterplan is the number and proximity of access points from Kilwinning Road for the final ACH estate.

- The provision of a wide 'spine' road over the initial section of carriageway to provide access and egress from the site is envisaged as appropriate to meet development requirements.

- A link to the existing private estate road network from a junction on the initial section of spine road should be considered, and indeed the linkage to the current estate network developed at several key interface points. Key aims will be for existing healthcare operations to be generally unaffected by the change in access arrangements and to minimise disruption to operations.

- Regular and close liaison with the NHS transport planner and design team should be maintained in most transportation related matters.

4.2.2 Public Transport

The ideal strategy for the development is to achieve penetration of the site by public transport, most likely to be in the form of bus services. Considerations to be explored include:-

- Looking at what bus priority measures are desired and are achievable from the main Kilwinning Road. The form of junction on Kilwinning Road is key to this and will be derived from the Transport Assessment. A signalised junction offers opportunity for transponder system to provide bus priority and this can be explored. further

- Active links and discussion with bus operators, and where appropriate SPT, to support the principle of, and practical application for, penetration of public transport to the site.

- NHS A+A should look to refresh the previous discussions with operators. The feedback from these discussions will provide early direction as to what form public transport provision takes.

- Early indications from consultation with the NHS and SPT, the bus operator, suggest there will be limited opportunity to review priority bus services to enter the ACH site and certainly during the early NACH phase, due to service disruption. Further consultations should continue to explore other opportunities, such as potential links from Castlepark Circle, but these are thought to be longer term. Facilities for bus provision within the site to a point as close as possible to the new Main Entrance should be made to suit possible future outcomes.

- Close liaison is required with NHS A+A n relation to the Travel Plan, and the engineer will need to understand staff travel behaviours, and NHS-promoted initiatives to reduce reliance on the use of private cars, for both the existing and new facility. The NHS undertook some staff surveys in 2010 which may help.

- day, and less frequently during course of the day / evenings.

VEHICULAR ROUTES AROUND SITE

- It may be possible that the bus operators consider selected services could penetrate the site during peak periods. On an off-peak or intermittent basis, routes may remain on Kilwinning Road and be 'served' from the existing bus stops nearby the site's western boundary. It may be necessary to vary the frequency of service throughout the day to tie in with normal working

- Pedestrian routes from Transport 'nodes' should be clear and welcoming, and crossing provision which may encourage this method of visiting the site via public transport. 'Walk-with' integration with traffic control is possible assuming the site entrance is signalised.

- The opportunities for developing / utilising the intermodal links to train services at Irvine Station.

- Developing the geometry of internal roads to accommodate bus movements and closely supporting the principal Architect.

- Cognisance shall be given to shelters and other facilities, such that awaiting evening and night services is undertaken in a safe environment. In this respect, close proximity to main entrances will be an advantageous position. That needs to be balanced against other activity close to the proposed entrance.

4.2.3 Estate Traffic Management

The management of the existing estate network and the interaction with the new development areas will require early and close liaison with the NHS team.

The general arrangements for the estate management are emerging:-

- A review of the existing network where links are proposed, and identify particular shortcomings which can be readily addressed, in an effort to provide a cohesive development.

- Understand and clarify with NHS operational requirements for both the NACH facility and retained facilities within the site. Information should be sought on the type and frequency of movements, requirements for any 'blue-light' priority measures, servicing arrangements, time periods over which servicing occurs and their geometric requirements.

- Staff and public safety are of prime importance, and will feature in all aspects of the Estate Management.

- The interaction of vehicle and pedestrian movements campus-wide will be a pre-eminent consideration. The estate traffic management strategy will aim to reduce vehicle/pedestrian conflict, promoting segregation wherever possible.

- Focus should be given to segregation of service vehicles from main pedestrian routes in particular. A separate service-only access is aspirational, and the current Architectural layout goes some way to achieving this. Consideration is required to the presence of discreet or piecemeal parking areas which exist along the northern access route.

- Taking cognisance of the existing and anticipated staff movements through the north part of the estate to serve existing discreet parking and other estate uses, significant segregation may prove challenging to realise.

- NACH site area forms a central core within those peripheral existing facilities that are being retained. These existing facilities are linked essentially by a ring road of existing infrastructure. Potentially look to consider one-way operation for selected areas, but this would need to work for the hospital for it to be adhered to (for selected vehicles or users).

- Signing and lighting and arrangements will be developed which will be put in place to support new layout arrangements. The current NHS house style of wayfinding signage would be adopted , but avoiding temptation to list anything other than main destinations and associated parking. Clear, simple and effective signing important to smooth operation of site.

- Similarly, lighting of the campus as designed by M&E consultant should provide appropriate levels of lighting. These should be real requirements recognising key public areas being well lit, and robust lighting where there is potential pedestrian / vehicle conflict and key routes/ crossings.

4.2.4 Parking Strategy

The successful management of parked vehicles on healthcare campuses is often a challenge to achieve, requiring to balance the very differing needs, in terms of concentrated periods of activity, with staff, patients and visitors having a common desire to be as close to the point of entry as possible.

- Further discussions and assessment of NAC guidance are required to establish acceptable parking numbers, in relation to various guidance documents available. Also NHS aspirations for staff and visitor provision should be considered in relation to statutory guidance and BREEAM credit rating. In accordance with the SHTM, the parking accumulation survey commissioned in 2010 will help inform parking requirements for the developed site. This is turn will help identify opportunities to rationalise parking efficiency and inform the site layout/ parking distribution.

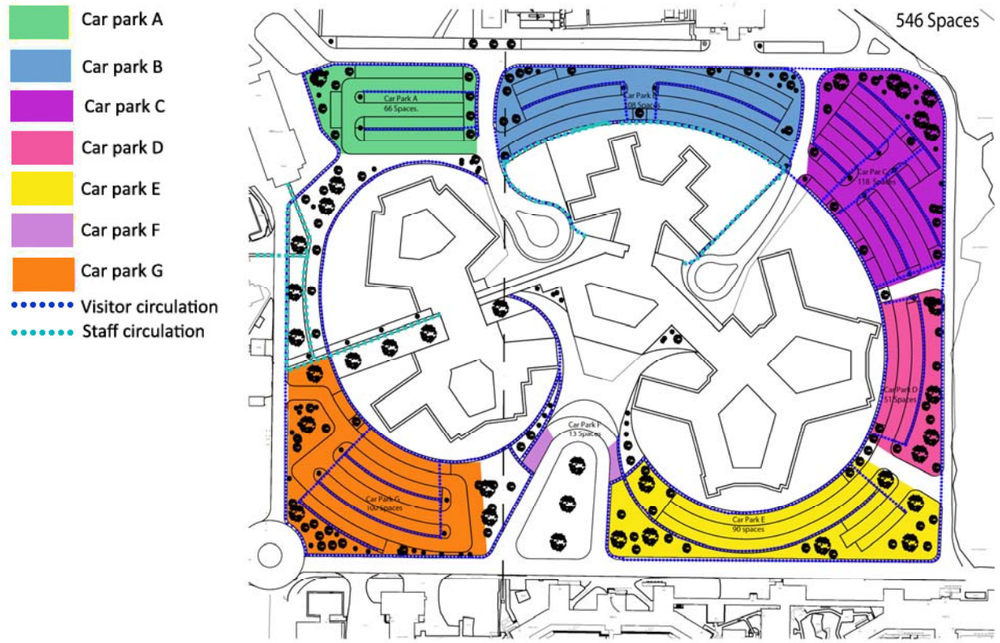
- The quantity of accessible parking provision appropriate should aim to meet the real requirements of the Hospital, which may be greater than the minimum provision required by 'normal' guidelines.

- Car parks of certain size require to have character in order that different areas can be distinguished and users can locate vehicles readily.

- While currently an early assessment has been made for the equivalent land take area, which this parking provision consumes, detailed parking layouts will be developed to take account of pedestrian and user safety, security, accessibility, proximity, landscaping aspirations and other financial drivers.

- How parking provision is distributed and managed is part of the internal management strategy. The layout of car parking where possible, will be driven by the proximity to where people want to go and the relative abilities of those persons. Longer distance to point of entry can be discouraging, and lead to parking in the wrong areas. However it is acknowledged that many live buildings are spread throughout the ACH estate. Therefore a rational approach to parking proximity is likely to be impractical across the entire site due to the limited areas available for new parking, extent of new building zone and other existing site constraints.

- The initial thinking is to provide accessible (eg blue badge) and visitor parking closest to the main entrance. Staff parking would be located a little further away from the main entrance, but in designated and secure parking with access facilitated via a separate entrance in the new building.



Circulation/ access

- To be effective, any parking strategy that seeks to 'control' the distribution of users by type, needs to be enforceable. Liaison with the NHS will determine what enforcement is desirable and practicable.

- Accessible parking - ie parking provision which meets the best of DDA requirements - will be located at closest points to main entrances, with level access, flush kerbs and larger spaces in line with current building standards. The gradient of the car parks in these locations will also be considered, although excessive gradients are not anticipated.

- Signage of parking areas from the main entrance is important in the management of the site. There are long term and short term parking practices. Staff generally park long term, and rightly expect provision in convenient areas, where practicable. Shorter term use such as visitors or day care patient can be guided, but there is a need to avoid perception that parking provision is remote. If staff parking is to be remote, alternative entrances will be assessed, which support the distribution of spaces.

- Material choice for car parking areas can contribute to other strategies. The use of permeable paving system in areas used as part of SUDS system offers a space-friendly solution to treatment and storage to storm water flows. This also addresses other restrictions in respect to SUDS (no open water etc) and should be balanced with financial drivers.

- At the next stage, the design team should consider also the temporary parking arrangements during demolition of existing pavilions in consultation with NHS. There is a clear principle to offset the loss in spaces with new or interim provision wherever possible. Subject to land availability and NHS requirements, the site of the former maternity unit could be one possibility.

4.2.5 Pedestrians and Cyclists

Pedestrian and Cyclist provision is closely linked to Public Transport and Travel Plan ideals. The teams will consider the following:-

- The flow of traffic within the site should be managed by integrating pedestrian priority features with traffic calming measures – raised crossings promote safe, at grade pedestrian routes, and promote a message to vehicle users to encourage lower speeds in the Campus. The safe management of pedestrians and other users around the Campus, as stated previously, is a pre-eminent tenet in design delivery.

- The security of patients and the nature of the operations of the hospital are also a priority. .

- The anticipated pedestrian movements to and from the site externally will be those generated by public transport principally. The need to provide good links from these public transport nodes is also outlined above.

- Internally, a footpath or footway network should be established which responds to the desire lines of pedestrians, be they car park users, users to/from public transport, or walking visitors / patients.

- Wide footpaths would be established on key routes, 3.0m – 3.5m wide to operate as shared pedestrian / cycling facility.

- Access routes and paths where there is close interface with surrounding woodland looked at, with reference to TPO status.

- Movement of pedestrians around the site generally between facilities will be considered on a site wide basis, and the integration of existing footway provision with new infrastructure.

- The new main access would also form the principal pedestrian cycle access point, adopting a route from Kilwinning Road adjacent to the main access road. The design team should promote the principle that segregated, shared footway/cycleway presents good practice from the entrance to the site. Particular emphasis will be given to areas of high pedestrian movement and concentrated vehicle manoeuvres.

- The national cycle network does not link or run by the site, passing some 1km or so away. In consultation with NAC, it is agreed that adequate cycle provision/linkage within the ACH site will be taken to an agreed point at the existing NACH site boundary.

- The design team will need to understand the intended staff usage of cycles, and the NHS sponsored initiative and incentive schemes in place, for example. Information should be obtained to allow an understanding of staff travel movements at the moment, and the catchment of staff. The proportion of site users using train station at Irvine, for example. The Travel Survey undertaken by the NHS will help inform this element of the Travel Plan.

- Areas for secure cycle shelters and cycle provision in relation to Planning requirements and BREEAM credit rating requires review at the next stage.

4.2.6 Drainage and SUDS

The drainage strategy will outline the proposed design principles required to adequately manage post development foul and surface water flows.

It will also outline the likely key strategy requirements required to manage post development drainage and flood risk.

General

The design of proposed foul and surface water drainage infrastructure is to be designed with reference to current standards in order to meet health and safety requirements and the required minimum level of service.

The operational aim of the proposed drainage infrastructure is to provide a drainage and sewer system that performs in accordance with respective design requirements. Namely: -

- The entire system is operationally ready at all times and functions within the performance requirements set out by the relevant statutory undertakers and end user,
- The operation of the system is safe, environmentally acceptable, and economically efficient,
- As far as possible, the failure of one section of a sewer system will not adversely affect the performance of the other parts, notwithstanding the condition of the downstream public sewerage network, and assuming the existing private drainage system continues to be maintained.
- Flooding frequencies shall be limited and controlled to prescribed values set out by North Ayrshire Council and/or Scottish Planning Policy. Furthermore, they shall not endanger existing adjacent structures and utility services,
- Regulation and the specific need of public health and life shall be safeguarded, along with the health and safety of operator personnel,
- The required design life and structural integrity shall be achieved for new drainage.

Existing Drainage

- There is an extensive drainage network on the site, with a broadly separate system for surface water and combined sewage.
- URS previously undertook a detailed exercise in the review of the CCTV surveys and layout drawings. The supporting report to the CCTV survey identifies areas of concern on the condition of existing pipework on which the NHS can focus their efforts. The continued operation and maintenance of the existing drainage system will be relied on within the permanent works.
- The review identified a suite of recommended remedial works to the existing drainage network and residual risks to design. With the recommended remedial measures and general maintenance requirements effected by NHS in advance of site implementation, this will offer the most flexibility to achieve new connections to the existing drainage network. The scheduled maintenance and remedial works are strongly recommended.
- The review will also be used to consider the phasing of the development, and the interim measures put in place to adequately drain the site during each construction stage.
- Initial connection points for foul and surface water for the completed development have been identified, generally along the west flank of the main new-build areas.

Surface Water

Subject to ongoing maintenance of the existing system, it is envisaged that connection to the surface water system will be at two or three locations within the site. These will generally be west of the new build area, ultimately connecting to the 600/750mm dia surface water drain which leaves the site at the north west corner.

The design of the surface water network will be developed to meet the specific requirements of the proposed hospital development in order to meet the functional and performance requirements noted above. This could include, where practical, infrastructure to:

- Restrict, if required, post development run off rates to a level acceptable to both the nominated Licensed Provider / Scottish Water and North Ayrshire Council.
- Minimise above ground storage to an acceptable minimum given the likely mental health care end use of the hospital facility with no formal above ground features introduced in design. It is anticipated that will result in the provision of storm water storage below ground, potentially to the 1 in 200 year event, subject to depth of the ground water table. This may be supplemented with minimal low lying areas to accommodate short terms storage of directed overland flows.

- Provide appropriate protection to defined ambulance blue light corridors and the principle access. This relates to limiting surface water depths contained within any carriageways to an acceptable minimum.

- Consider existing site characteristics such as the topography, existing public and private drainage infrastructure, groundwater table, ground permeability etc.

- Define minimum floor levels in order to achieve the required level of protection associated with flood risk. This will finalise the relationship between developed site levels and building location and level. Note the identified flood plain and suggested levels applied to specific areas of the site and is likely to vary from the minimum floor level identified within the URS Flood Risk Assessment.

- The crossing of the service tunnel which runs north/south across the platform should be recognised as a key constraint to new drainage, and will require to be negotiated/ crossed with minimum disruption.

- For further details with regard to SUDS refer to Section 2.6.5 and Section 2.6.6 with regards to flood risk.

Foul

- The proposed development site is crossed by a main existing foul water drain, believed to be private from early investigation. Wastewater connections for the new building are therefore readily achievable within the site. However, the presence of this existing main foul drain may present a constraint in relation to proposed building location. This drain flows below the existing Horseshoe buildings and the pipe condition will require to be monitored and maintained and closely inspected prior to confirmation of connection.

- Scottish Water confirmed that the existing public sewer network does not run through the site. The downstream public sewer commences at the site boundary to the northwest corner of the ACH site, which is still to be verified.

- The design of the proposed foul infrastructure will also be developed with reference to the functional and performance requirements noted above.

- Acceptance of post development flows will be established with Scottish Water Retail Connections through a formal Development Impact Assessment application to suit the updated development. This will define any downstream network constraints associated with either the stage 3 (trunk drainage network) or stage 4 (waste water treatment works) assets.

- Early indications from Scottish Water suggest the existing sewerage network is not constrained per DIA response dated May 2010, but capacity cannot be reserved. Formal drainage technical approvals will require to be processed through the NHS nominated Licensed Provider and Scottish Water.

- The crossing of the service tunnel which runs north/south across the platform should be recognised as a constraint to new drainage, also as noted above.

- The nature of discharge associated with the development site may also be subject to an appropriate level of authorisation granted to the NHS nominated Licensed Provider by Scottish water for the disposal of non-domestic effluent. This is known as a trade effluent discharge consent.

- While thought to be unlikely, the diversion of any public sewer will require the formal granting of Scottish Water / Nominated Licensed Provider technical approval, together with alteration of the associated wayleaves.

Sustainable Urban Drainage Systems

The provisions of appropriate Sustainable Urban Drainage Systems (SUDS) are a requirement of the Water Environment (Controlled Activity) Regulations 2005 to manage the quality and quantity of surface water run-off.

The development proposals will therefore identify the appropriate level of treatment of surface water run off for each element of the works. This will be determined through a review of the post development run off characteristics against the sensitivity of the receiving watercourse and the treatment levels defined in 'CIRIA 697 – *The SUDS Manual'* and also in consultation with SEPA.

The choice of acceptable SUDS will be developed through a balanced approach. Each SUDS option will be evaluated against site characteristics, development constraints and the requirements of the respective vesting / adoption authorities if they should so apply.

Typically, treatment techniques such as permeable paving systems, filter trenches and filter beds can be readily incorporated within normal infrastructure corridors, and combined with underground storage for attenuation purposes.

Elements with regard to flood risk are identified in the section below.

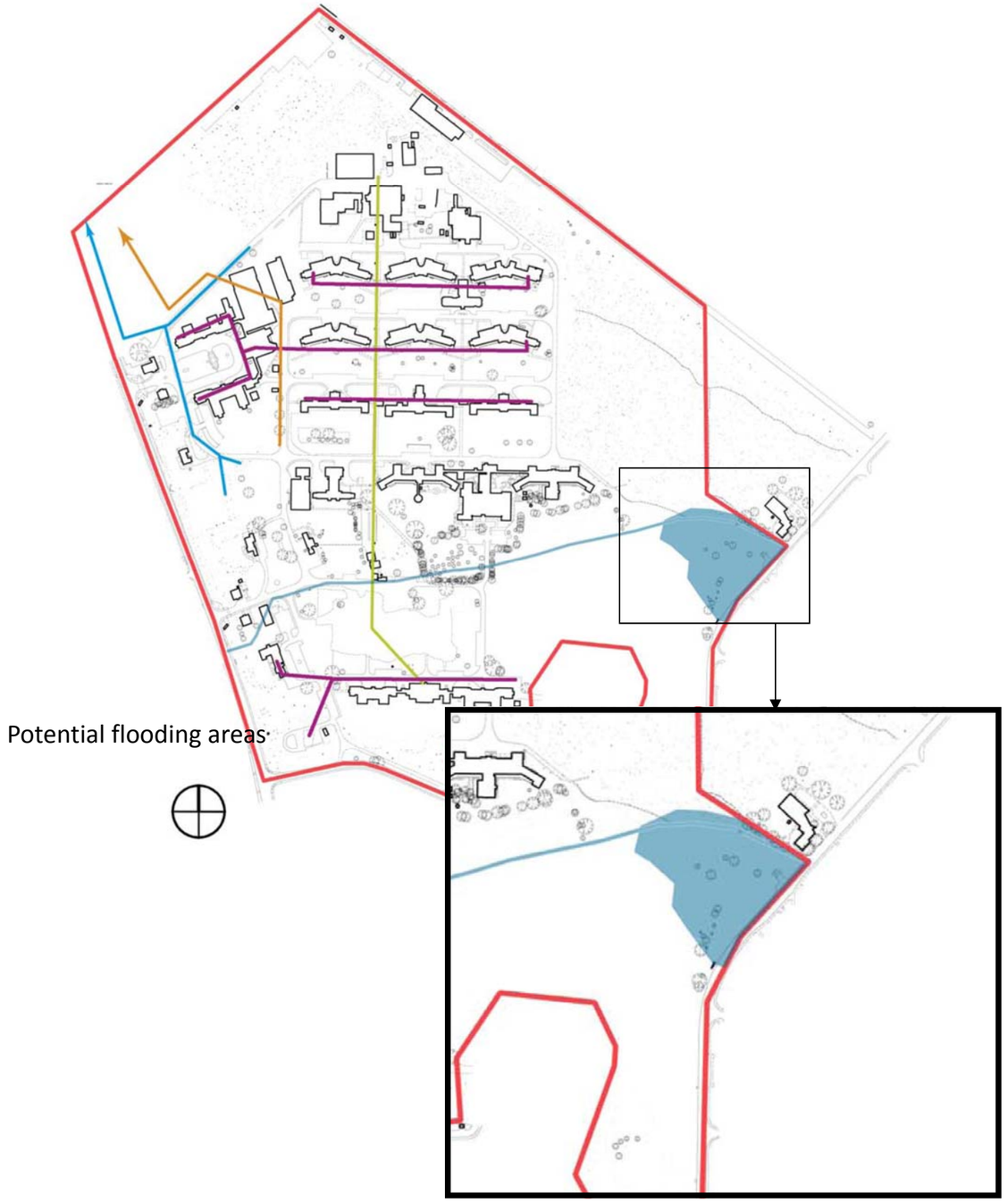
4.2.7 Flooding (fluvial & pluvial)

The ACH site area is generally flat and is traversed by the existing Red Burn watercourse to the south of the currently proposed NACH footprint.

The design of the post development infrastructure is to be undertaken with reference to the potential risk associated with either pluvial (rainfall) or fluvial (watercourse or coastal) flooding.

In order to manage post development flood risk, the following design principles are to be incorporated:

- The current platform levels within the new building footprint suggest that finished floor levels shall be adequately set above the corresponding level of protection associated with fluvial flooding from the Red Burn. This will also include an appropriate level of freeboard. It is understood that the proposed hospital will be protected against the 1 in 1000 year event.
- Setting the post development floor level of the building above the surrounding ground level, ensuring that the surrounding ground falls away from the building, and that surface water can flow through the site without ponding or otherwise posing an unacceptable flood risk.
- Flood depths shall be kept to an acceptable minimum within the development site. This could potentially include limiting flood depths and flow velocities to an acceptable minimum.
- Key flood route paths shall be defined within the development masterplan and should be maintained in perpetuity to maintain the required level of protection.
- Further details with regards to the fluvial flood risk can be found within the URS Flood Risk Assessment for the wider masterplan area. The conclusions from this document have received acceptance in principle from the NAC Flood Protection Officer, during pre-planning consultation. This will be reviewed alongside the full Planning Application and drainage design principles prior to final approval being granted.



Potential flooding areas

4.2.8 Site Levels and Profiling

The site is relatively flat in general terms. This may in fact, present a challenge to achieving the various overland flood routing requirements which will have to be demonstrated in the early detailed design stages.

Other factors to consider include -

- The periphery of the NACH site footprint is generally level at about 8.0m. The area within the footprint is generally 0.25 to 0.5m higher with some localised high points at 8.5m to 8.6m or so. Ground levels around the existing Horseshoe buildings sit at about 7.5m to 8.0m.
- Platforming will be undertaken within an envelope of the immediate development area, the boundary level conditions such as existing buildings and infrastructure present a constraint to be recognised.
- Providing a constant floor level along the length of the building frontage looks achievable from initial topographic review, subject to the Architect's requirements. It is recognised the introduction of a single step/ramp to help new buildings tie-in with surrounding ground levels in close proximity to existing buildings may be considered beneficial. Localised areas may require to generate some deliberate slopes outwith the immediate building footprint to meet existing level constraints, but these are expected to be modest.
- Any arrangements to take out level differences will require to be compliant with DDA requirements and the operational requirements of the Hospital.
- Falls should be generally away from the buildings. Given emerging building form, the central spine corridor pivot for site levels to fall away towards external areas, maintain identified flood routing without creating a risk for the development.
- The significant constraint presented by retaining the service tunnel/duct which runs north/south through the site. That said, it is recognised that extensive alterations to the platform levels are not anticipated, and retaining the service duct should be readily accommodated.
- The re-usability of material will be established prior to making a final assessment on levels. Platforming will relate to the findings of the intrusive ground investigation works.
- The team should seek to achieve efficient floor levels and external levels which recognise construction arisings. This is likely to be an iterative exercise between the Contractor and Architect, with engineering support as required.
- Arrive at a volumetric assessment of the work entailed.
- A holistic approach to assessment will look at the potential re-use of excavated hardstanding material for other uses (following crushing / grading or other process), such as capping or stone for sub-base areas, or non-core hardstandings/footpaths and the like.
- The site conditions will look at constraints from made ground, site contamination, gas and the associated mitigation measures, which will be in turn dependant on the finalised or emerging layout. Very much an iterative process.
- During main intrusive Ground Investigation, the need for supplementary ground investigation has been identified, which will include intrusive works following building removal. As such the platforming strategy may be developed on a phased process.

4.3 Structural Engineering Strategy

4.3.1 General

The design of the structural engineering elements of the building will be carried out in accordance with the below, non-exhaustive list of criteria.

a) Be fully co-ordinated with the design of the building fabric, finishes, services, facades, internal walls, medical equipment and existing site features.

b) Provide adequate space for the distribution of services, while maintaining the required finished floor levels and the floor to ceiling heights.

c) Maximise the clear zone above ceilings for services.

d) Be economically adaptable to meet the changing needs of the client.

e) Require minimum maintenance and be designed to accommodate maintenance requirements for services, equipment and building fabric.

The above criteria list can be further developed as the project progresses.

4.3.2 Foundations and Substructure

The proposed development comprises of predominately two-storey hospital structures with entrance structure, intermittent one-storey hospital structures, clusters and associated link corridors.

The ground conditions generally comprise granular alluvial deposits to between 12 and 20m bgl, underlain by stiff glacial till to between 19.5m and 21m bgl at which depth mudstone bedrock was recorded.

The compressible alluvial deposits encountered at the ground surface are not considered suitable bearing strata as they will give rise to significant settlement induced by the anticipated building loads from the two-storey structures. Consideration should be given to adopting a piled foundation solution to transfer the structural loads to suitable bearing strata at depth. Determination of suitable bearing strata at this site is dependent on the type of pile adopted. If appropriate, specialist piling contractors should be consulted regarding the use of any particular pile types and systems.

Due to the weak, compressible soils at the ground surface, it is considered that a suspended floor slab will be necessary.

The construction of piles in close proximity to existing structures requires care in relation to the effects of ground disturbance, noise and vibration particularly in respect of the sensitivity of the surrounding existing hospital buildings.

Generally, other factors to consider in the overall foundation design will include the following:

- Bridging details over the existing service tunnel.
- Possibility of uncharted services and existing buried structures.
- Shallow ground water

4.3.3 Superstructure

Using the developing Stage C floor plans presented by the Architect, Core Associates, and ensuing discussions, URS have carried out an assessment of the possible superstructure framing options. The study considers:

- A typical ward block, considering superstructure options for both one & two storey configurations. It is noted that approximately 70% of the development will be two storeys.
- Entrance building, alternative ward blocks, different bedroom configurations, Link corridors and the Energy Centre

The following text commentary discusses each of these respectively.

<u>Typical single storey ward block</u>

Refer to Core Associates Architect's layouts and sketches.

Timber framed, traditional masonry and steel framed solutions can each be considered.

Timber frame has limitations given that internal load-bearing walls and racking panels do not meet the technical brief requirements, and therefore this option is not considered further. Similar to timber frame, a load-bearing masonry solution has limitations. Crosswalls required to resist lateral loads are not commensurate with the technical brief requirements for future flexibility. Accordingly this option has not been further investigated.

A steel framed solution (either braced or portalised) appears to be the most appropriate solution given the technical brief requirements for future flexibility. This offers the following benefits:

- affords the Architect greatest level of flexibility,
- optimises repetition of member sizes, floor depth and service zones,
- reduces load bearing elements taken to foundations,
- provides the most cost effective framing layout.

With a steel framed option the roof structure can be formed in timber trussed rafters, lightweight steel lattice trusses or by utilising a steel portal frame. The benefits of a steel portal are that a complete open space can be created within the roof area giving flexibility for the positioning of services, walkways and access.

Typical two storey ward block

The design and material options referred to above are equally relevant for the two storey ward block and a steel portal solution is recommended. For a two storey height the columns in a steel portal are often larger than those a braced frame and hence can be difficult to hide within a wall. However with an intermediate floor, the stability provided by that floor should reduce the column size so that it can be detailed more easily. Hence the benefits of full flexibility of space should be achievable. The first floor construction options are:

- composite concrete (structural decking).
- precast concrete (hollowcore).

Based on the above and from Design Team discussion it is recommended that the superstructure framing should be based on steelwork solution, preferably portalised. The roof shape can be developed as part of the Stage D design development.

Integration and co-ordination of the steelwork vertical elements (columns, vertical bracing and elevational framing) into the Architect's floor plans is the next key step to be undertaken. It is recommended that this grid development is carried out early in Stage D.

Entrance building, alternative ward blocks, different bedroom configurations, Link corridors and the Energy Centre

Their irregular shape and configuration lends itself to a steel frame solution, including the roof, thus providing maximum flexibility.

Moving onto Stage D, the design team can investigate the selected options in conjunction with the Architect, M&E consultant and Client, thoroughly considering the below non-exhaustive list of items.

- Optimum grid arrangements in consideration of geometric & structural flexibility
- Modularisation and off-site fabrication opportunities.
- Optimum floor to floor heights. Reduced structural zone, increased service zone.
- Service integration.
- Fire and corrosion protection.
- Vibration response.
- Cost and programme requirements.
- Future fit-out requirements.
- Compatibility with the building fabric & finishes.
- Positioning of the lateral stability bracing systems.
- Durability and maintainability.

4.4 Environmental Strategy

The following summarises the strategic environmental support proposed to assist the developing work of the NACH design team. Detailed environmental assessment is not recommended until the Design Brief is confirmed but, as set out below, proactive dialogue with North Ayrshire Council may assist in developing an overall planning strategy. Otherwise, it is recommended that more detailed environmental appraisals and advice is triggered by the release of the client Design Brief.

4.4.1 Environmental Design Support

Consultation is required with North Ayrshire Council to ascertain the form of Planning application and supporting information required to present environmental assessment (Environmental Statement etc).

Regular and early dialogue with NAC may also be helpful in advising the NHS with respect to the overall planning strategy for the site. NAC requirements with respect to masterplan details and environmental appraisal of the NHS site for disposal should be re-clarified as part of this strategy, taking into account extant planning policy.

4.4.2 Constraints Analysis

Following release of the Design Brief, URS will provide support to the team in identifying potential constraints. Baseline data collection can proceed at this point and as the baseline environmental information is collected, mapping of constraints can be completed to aid design evolution.

4.4.3 Support to Design Evolution

Consideration of environmental issues during design evolution can help to facilitate the avoidance of adverse impacts, thus limiting the need for mitigation action. This is the preferred approach in the hierarchy of mitigation (commonly looked for by statutory consultees, e.g. SNH). This support would include:

Preliminary environmental appraisal of design options and review against the previously proposed scope for the Environmental Impact Assessment (EIA). As part of this, supplementary discussion with NAC would be recommended to confirm proposed EIA scope, as presented in the North Ayrshire Community Hospital EIA Scoping Report, dated February 2010 (ref. A&A01-URS-RP-EIAScopingReport-001)

Assistance with selection of preferred design option(s) which have incorporated environmental design so as to avoid adverse impacts at the EIA assessment stage.

4.4.4 Ecology - Planning and Mitigation

The main ecological risk to securing Planning and to commencing demolition/construction is (i) the reliability (age) of data to meet survey guidelines and then (ii) obtaining a derogation (license) from the licensing authority to permit destruction of bat roosts. The mitigation for this risk includes:

i) Robust evidence base

ii) Consultation with both determining and licensing authorities, NAC, Scottish Executive and SNH.

To generate a robust evidence base, up to date survey data will be required. The data are now more than 2 years old and likely to be unreliable for the purposes of EIA and determining a planning application. The surveys should therefore be repeated in spring & summer 2012 to determine the presence or probable absence of bats, and the location of roosts (if present).

An approximate timetable is given below with approach/actions, assuming a planning application is to be submitted in summer 2012 (a licence application may only be submitted following receipt of Planning consent).

Time	Action
May-June 2012	Repeat Bat Surveys
June 2012	Reissue ecological assessment with 2012 data. Develop ecology mitigation measures and agree with design team, including bat mitigation programme and methods; to be incorporated into ES/planning application
June 2012	Consult with SNH and NAC regarding bat impact and mitigation, and other ecology mitigation and enhancement proposals
Summer 2012	Submit Planning Application Draft bat licence application, method statement and programme with design team.
Autumn/Winter 2012	Obtain Planning Consent
January 2013*	On receipt of planning consent and discharge of relevant conditions, submit bat licence application, method statement and programme with design team.
6 weeks after submission	Bat licence issued
March-April 2013	Bat exclusion and mitigation implemented in advance of demolition where feasible
June/July 2013	Commencement of Demolition & Construction with supervision as necessary for areas that may support roosting bats.

* Dependant on conditions

A programme of annual activities during construction stage 4, including License implementation, annual bat monitoring (including post construction), and ongoing consultation with SNH and other stakeholders will be required.

Section 5: Environmental / Mechanical & Electrical Engineering

5.0	**Building Services Design Strategy**
5.1	Introduction
5.2	Overall Philosophy
5.3	Main Utilities and Site Wide Services Infrastructure
5.4	Approach to Sustainable Design & Low Carbon Technologies
5.5	Environmental Conditions & Design Parameters
5.6	Mechanical Services
5.7	Electrical Services
5.8	Public Health Services
5.9	Partial Refurbishment of the Horseshoe Building

5.1 Introduction

This document has been prepared as an outline building services scope of works / strategy document in support of the Outline Business Case submission by NHS Ayrshire and Arran and for general development/co-ordination, for the proposed new North Ayrshire Community Hospital on the site of the existing Ayrshire Central Hospital in Irvine. It should be read in conjunction with all other design strategy documents, client briefing documents and specifications, and derogation schedules produced in support of the same.

5.2 Overall Philosophy

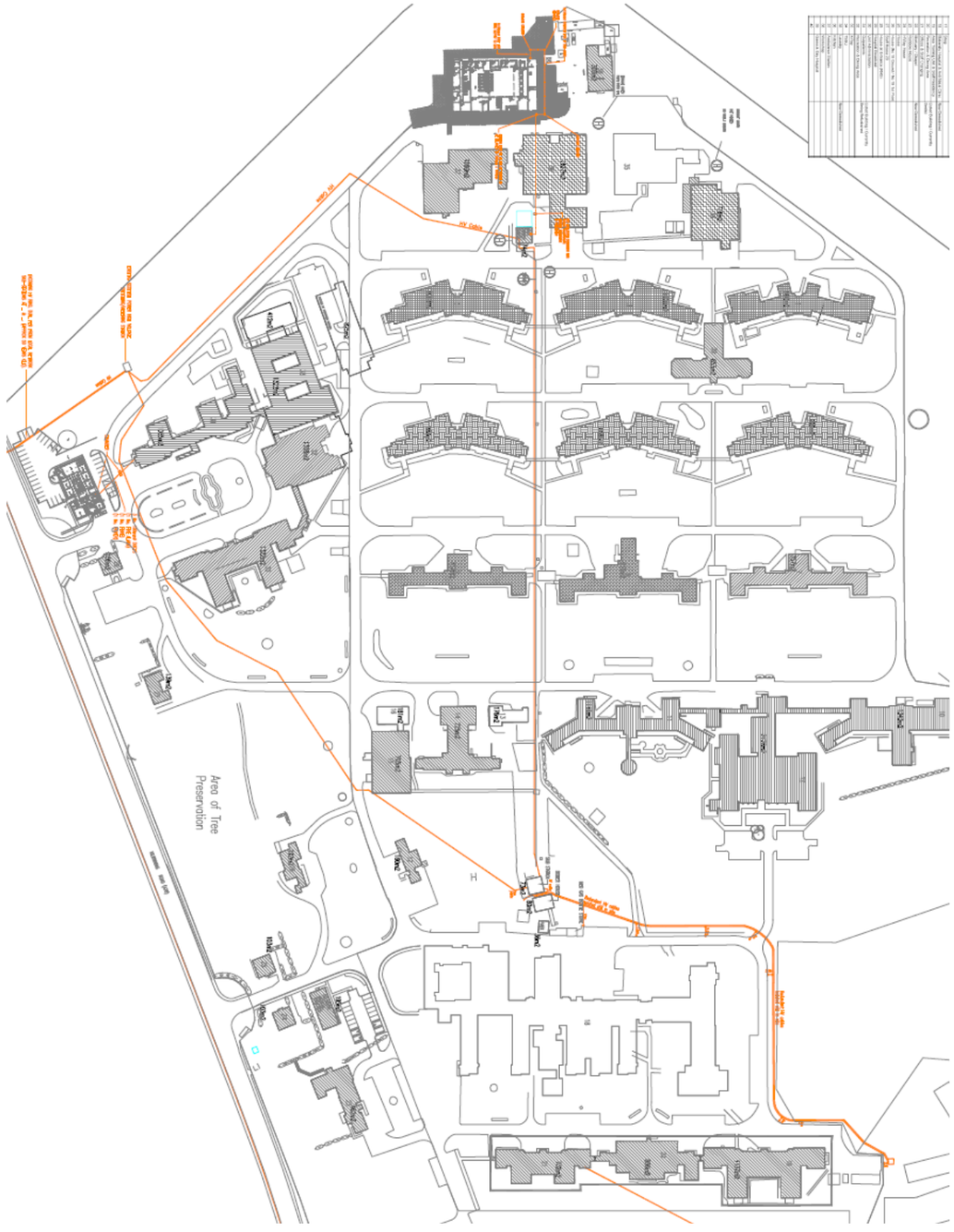
The overall philosophy that will be adopted for the project will be to encompass all relevant briefing documentation prepared by NHS A&A, all current NHSScotland published Healthcare Design Standards where relevant, and all currently available and proven technologies. This shall assist towards designing a new community hospital that is capable of safely and comfortably housing and catering for the needs of all patients and visitors, allows staff to deliver the clinical and medical services required in the most efficient manner and infection free environment possible. At the same time it will be inherently energy efficient, revenue cost reducing, and contribute towards the NHS's and the Government's carbon reduction targets. Any non-compliances or deviations from the published standards necessary to meet specific client requirements or due to budgetary constraints will be captured in the master schedule of derogations for the project.

5.3 Main Utilities and Site Wide Services Infrastructure

The existing Ayrshire Central Hospital Campus has a myriad of existing underground services, of varying age and condition, providing the existing site wide infrastructure to service the main "Horseshoe" complex and all other outlying pavilions and villa blocks. The intention of this element of the NACH project is to provide new and upgraded/uprated incoming utilities infrastructure capable of catering for the new community hospital, and with the capacity to cater for the eventual inclusion of all existing services in the buildings that will be retained (as part of any future infrastructure project, funded separately from the NACH scheme). The capacity of the new supplies will take cognisance of the following;

- The estimated maximum demand requirement of the elements of the current Ayrshire Central Hospital estate that will be retained as part of the overall NACH Masterplan, including all currently under construction, small works projects, extensions and refurbishments to the Horseshoe complex.

- The new Central Decontamination Unit (CDU) which replaced the existing TSSU.



- The estimated maximum demand requirements of the proposed new North Ayrshire Community Hospital, plus an additional 25% future expansion to these maximum demand values.

It should be noted that the proposed site wide provisions do not take account of any future developments on any excess land that will potentially be disposed of, or any developments not mentioned above. Any future development of this nature will require to be serviced independently of the main hospital utilities provisions described above.

The timing of the upgrading of the utilities supplies is planned to coincide with the completion of the new community hospital, and any eventual inclusion of the retained estate happening thereafter. In the interim period multiple incoming supplies will be retained to service the site, with some of these remaining live through excess land that might otherwise be disposed of.

It should be noted that the order in which existing buildings on the site are decanted will require taking in to account the existing services strategy on the site. For example some existing pavilions are supplied with heat from boilerplant located in adjacent pavilions and dependant on the order of decant and demolition provision for temporary heating may be required.

In advance of the main NACH project being built, a separate site services strategy has been developed and finalised in order to service the new Central Decontamination Unit. These works were completed in 2010 and are now reflected on the existing site wide utility drawings.

In terms of main incoming routes and locations of utilities apparatus, the plan is to re-provide these along the route of the north service road, towards the location of the CDU, and adjacent to the potential location of a remote energy centre that will serve the new community hospital, in the vicinity of the existing estates workshops. A brief description of the individual utilities services that will be provided as part of the NACH project are described below;

a) **Natural Gas**

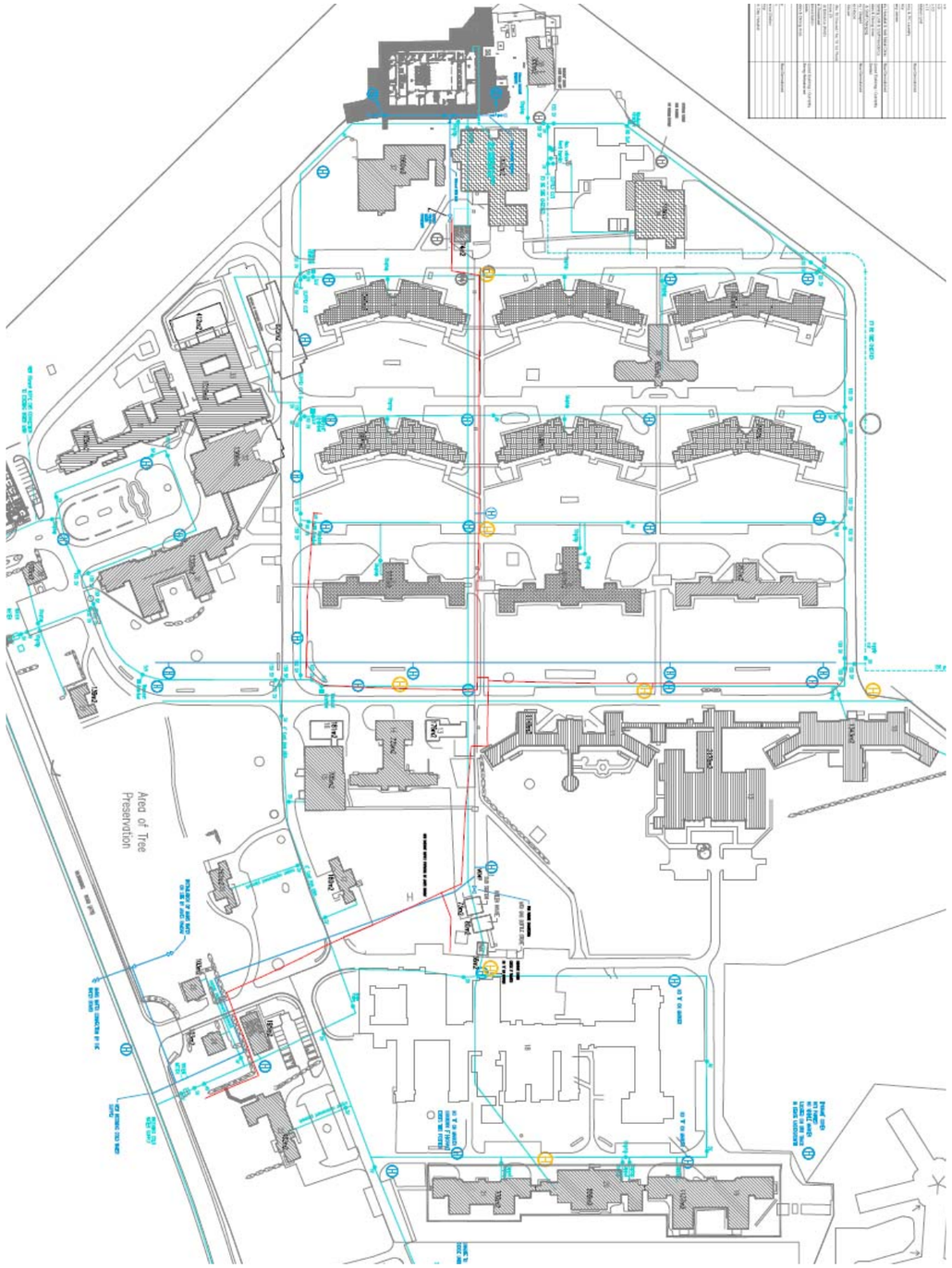
A new medium pressure Natural Gas supply will be supplied off Kilwinning Road and will terminate in a new gas meter/governor housing in the vicinity of the existing gatehouse buildings. This supply will be extended downstream of the main meter housing to serve the new community hospital's Remote Energy Centre boiler installations, as well as providing natural gas to any ADL Kitchens etc within the Community Hospital, all with a 100Pa drop limit. Provision for future connections to the rest of the retained estate, and diversions round the new main entrance hub will also be made, where required, via a series of valved connections within the downstream mains infrastructure, and existing sub-mains branches from existing buildings that are to be demolished will be isolated and disconnected following completion of the site decant strategy.

b) **Electricity**

The existing incoming HV supply off Kilwinning Road will be retained and revised for the new development (NHS A&A have received confirmation from Scottish Power that the existing incoming supply is sufficient for the increased load). The existing private HV ring will be extended and upgraded as necessary to accommodate the new NACH. This will involve the retention/ re-use of existing sub stations (Maternity Sub-Station and recently upgraded Kitchen/ CDU Sub-Station) and supplementing these with new substation plant and infrastructure as required for the new development. The retention of the existing Maternity sub-station (or an eventual replacement for it) and it's low voltage standby generation is required due to the distances between the proposed north sub-station location and the extremities of the retained estate as it is not possible to incorporate a more central single sub-station location into the current masterplanning strategy. In the interim, as many as possible of the existing supplies (currently fed from the Maternity sub-station) will be retained. This is in order to minimise both site-wide disruption, and development and infrastructure costs for the new community hospital. Once the existing Maternity sub-station is considered life expired then it too will require to be replaced, however the eventual size and capacity of the replacement sub-station is likely to be dependent on the eventual use of the disposal site to the south of the campus. Currently several options have been considered in terms of outline masterplanning –i.e. additional healthcare facilities, residential development, a leisure development, or a mix of all 3. As stated above, the current incomers will have an element of spare capacity however any eventual development of this excess land will require separate utilities incomers to suit their own requirements.

c) **Mains Water**

A new mains water supply will be provided off Kilwinning Road. Unlike the other utilities, the demarcation of utility/private mains will require to occur at the site boundary, therefore the underground meter chamber location will be in the vicinity of the gatehouse at the existing Horseshoe entrance. At this point, the new incoming water main will split into metered and un-metered supplies. The metered supply will serve the domestic and process water requirement of the site, and the un-metered supply will serve the firemain and fire fighting requirements of the site. Both will have back flow protection within the meter chamber, and will be designated as private mains downstream of the meter chamber. From this point on duplicate water mains (one domestic, one fire fighting) will be run to the remote energy centre, and providing future valved connection points for eventual connection of the existing water and fire mains serving the retained estate.



The new water main to the remote energy centre will provide the incoming water to the potable quality raw water storage tank, which will in turn feed the central filtration plant for the new community hospital. The existing fire main will be retained where possible, and diverted and/or extended as required to protect the perimeter of the new community hospital.

d) **Telecoms**

A dedicated telecommunications supply will be derived from the existing PABX building and a dedicated pit/duct infrastructure will be provided to route the cables to the main computer room located within the new hospital building. Possible reuse of existing ducts and services trenches will be investigated. The new telephone exchange and all active equipment will be provided by the Client, as per the IT/Telecomms Responsibility Matrix included within the briefing document.

5.4 Approach to Sustainable and Low and zero Carbon Technologies (LZct)

The approach to sustainable and LZCTs was discussed and agreed with NHS A&A's energy manager during initial scheme discussions. The strategy that will be followed as the building design develops is one of ensuring that the base design is as inherently energy efficient as possible to begin with. This involves reducing energy demand in the first place, minimising waste energy and utilising industry standard energy efficient design principles, and only then applying low and zero carbon technologies in order to further enhance the low carbon design.

From a building envelope design perspective, the optimal balance of natural light and ventilation versus solar gain will be sought via the fenestration. In order to assist with the changes to the Section 6/SBEM Compliance which came in to force with the issue of the Technical Standards 2010 and the low carbon design required by the planning authorities, the thermal properties of all building elements (walls, roof, floor and glazing) will need to be enhanced by at least 25%, and enhanced air permeability standards designed into the building envelope. The fenestration design will also take into account solar gain control requirements, with glazing elements on elevations between north-east, through south, to north-west considered for appropriate external or body tinted solar shading. NB: Any internal shading via blinds/curtains or similar can be provided as briefed but are less effective and are not taken into account as solar control measures for design purposes.

An initial desktop feasibility study looking into the most commonly available low and zero carbon technologies was carried out by DSSR early on in the project and presented to NHS Ayrshire and Arran. Any emerging technology or those that were unproven on the scale required for this project were quickly discounted. Others that were not considered appropriate for the particular site characteristics at Ayrshire Central and its semi-urban location were also discounted, e.g. large scale wind turbines. Rainwater recycling and ground water abstraction were also considered, but may not be acceptable due to perceived infection control risks, as well as feedback on their limited success on other NHS projects in Scotland. The low and zero carbon technologies being actively considered are those that are well proven, and being installed in healthcare facilities elsewhere. These include

- Ground Source Heat Pumps (with cooling option)
- Trigeneration - Combined Heating and Power (with cooling option)
- Biomass Boilers and/or Biomass CHP
- Solar Water Pre-Heating of the Domestic Hot Water

In addition to these, Ventilation and Flue Gas Heat Recovery will also be considered. The final selection of LZCs is wholly dependent on developing suitable applications within the building itself as only with this will the effectiveness of each technology be maximised, and acceptable revenue savings and payback timescales achieved.

In terms of minimum Low Carbon requirements, the current Technical Standards require a minimum of 30% reduction in carbon emissions when benchmarked against 2007 standards. The approach to developing low and zero carbon technologies described above will also contribute towards trying to achieve "Excellent" in terms of the BREEAM 2008 Healthcare assessment that will be carried out for the project (the project has been registered under the BREEAM Healthcare 2008 scheme).

Refer also to the separately prepared Sustainability Feasibility Report prepared by DSSR in support of the Outline Business Case submission.

5.5 Environmental Conditions and Design Parameters

The M&E environmental data derived from the standard ADB Room Data Sheets should be augmented by the production of an Environmental Conditions and Design Parameters Matrix which will demonstrate all significant input parameters used for the building services design. This will allow direct comparison of all relevant M&E design parameters in a single document, and hopefully streamline the design sign-off process. The design parameters covered include summer and winter temperatures, natural and mechanical ventilation designations (including air change rates and filtration standards where appropriate), illumination levels and lighting control strategies, fire protection measures and single/dual circuitry provisions.

5.6 Mechanical Services

The following is a brief description of the individual mechanical services design strategies being adopted for the project;

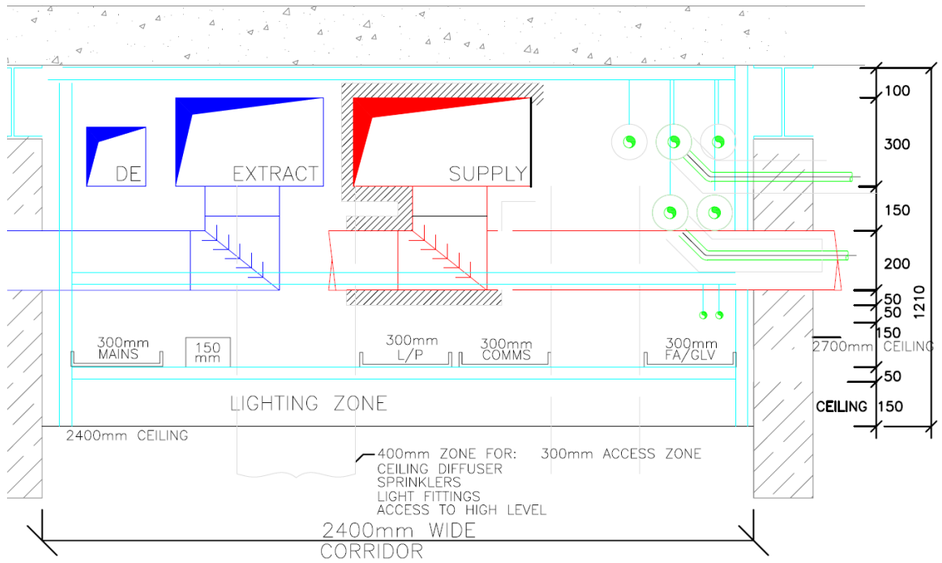
a) Heating and Heat Generation

Heat generation will be via an energy efficient, low carbon producing central boiler installation located within a remote energy centre. Subject to the outcome of the Sustainability Feasibility Study, the boiler installation may be a biomass or trigeneration CHP installation with back-up gas fired boilers, or a dual fuel natural gas and ultra low sulphur (ULS) gas oil system complete with flue gas heat recovery. The new central boiler plant will serve heating, hot water and air treatment requirements within the new community hospital.

The heating distribution will be via low pressure hot water and include constant temperature and variable temperature secondary circuits, sub-zoned to suit the varying occupancy patterns. Pumps and ancillaries for the heating system shall be located in the energy centre. The main heating medium will likely be ceiling mounted radiant heating panels, supplemented by low surface temperature radiators and under floor heating where acceptable. All heat emitters will be fitted with local thermostatic valves for individual room occupant control.

b) Ventilation and Summertime Temperature Control

The overarching strategy for the Ventilation design is to maximise the potential use of natural ventilation where possible, and supplement it with low energy, heat recovered mechanical ventilation. Acceptable summertime temperature limitations will dictate which solution is possible, and to what extent. These will be determined by carrying out dynamic thermal simulation studies for the main occupied spaces. Where neither of the low energy solutions (natural or mechanical ventilation) are sufficient to maintain the pre-determined maximum summertime temperatures under normal summer external design conditions, then an element of comfort cooling may be required. The types of rooms where this may be the case are IT Server and Node rooms, highly glazed internal spaces, and other technical areas with high internal heat gains. Most other areas, including inpatient bedrooms, waiting areas and typical office/consulting rooms should be able to be contained within the designated summer temperature limits. Where comfort cooling is required, this will be provided using Low or Zero ODP and GWP refrigerants incorporated into energy efficient comfort cooling systems, utilising free cooling chilling where possible. Systems shall be local split/VRV type.



As buildings become more air-tight and fabric U-values are increased to meet Technical Standard requirements on energy saving, it is important to consider summer conditions, and means of removing heat from within the building. Draft SHTM 03-01-Part A, Ventilation in Healthcare Premises indicates that patient areas should not exceed 28ºC for more than 50 occupied hours in a year. This temperature requirement calculated using the design temperatures from design weather files for input in to the dynamic simulation model not being exceeded.

In order to meet these requirements careful consideration of building orientation, solar shading, roof overhang shading, window opening strategy and occupation /use of rooms must all be taken in to consideration at an early stage in the design.

Air handling units to provide ventilation shall be located in three attic plantrooms, positioned to serve the relevant zones. A separate AHU may be required for the minor surgery area depending on specific requirements for these rooms.

c) Piped Medical Gases

Piped medical gases will be required in a few specific departments, and only in selected accommodation within those departments. The diversified simultaneous demand of these outlets will not be sufficient enough to merit full medical gas producing plant, however in order to minimise risks from mobile bottled gases, a remote cylinder store and piped distribution will be used.

5.7 ELECTRICAL SERVICES

The following is a brief description of the individual electrical services design strategies being proposed for the project. For the bulk of the electronic systems a separate workshop was held to go review potential design provisions in principle, and these will be further developed once signed-off departmental and room layouts have been agreed;

a) Power Source, Standby Generation and Sub-Mains Distribution

The high voltage infrastructure is as described in section 3b above. From the Community Hospital's new energy centre sub-station, Low Voltage supplies will be taken to form a new main section board for the community hospital development. Low Voltage Standby Generation will be provided as a resilient back-up to the incoming power serving the Community Hospital. The ultra low sulphur (ULS) fuel oil storage used to power the standby generators (and as back-up to the gas boilers) will be sized based on 200 hours design capacity of the generators. 2 No. stand-by generators will be provided and will adopt an N+1 configuration for NACH. From the main section board, low voltage supplies will feed other significant sub-mains section boards (e.g. Remote Energy Centre) and distribution boards in all wards and departments. Resilient dual fed supplies will be provided throughout, with automatic or manual changeover as appropriate. If a CHP option is developed then integration with the incoming supply will be provided. There may be a requirement for UPS/IPS for the minor surgery unit dependant on procedures to be carried out.

b) Small Power

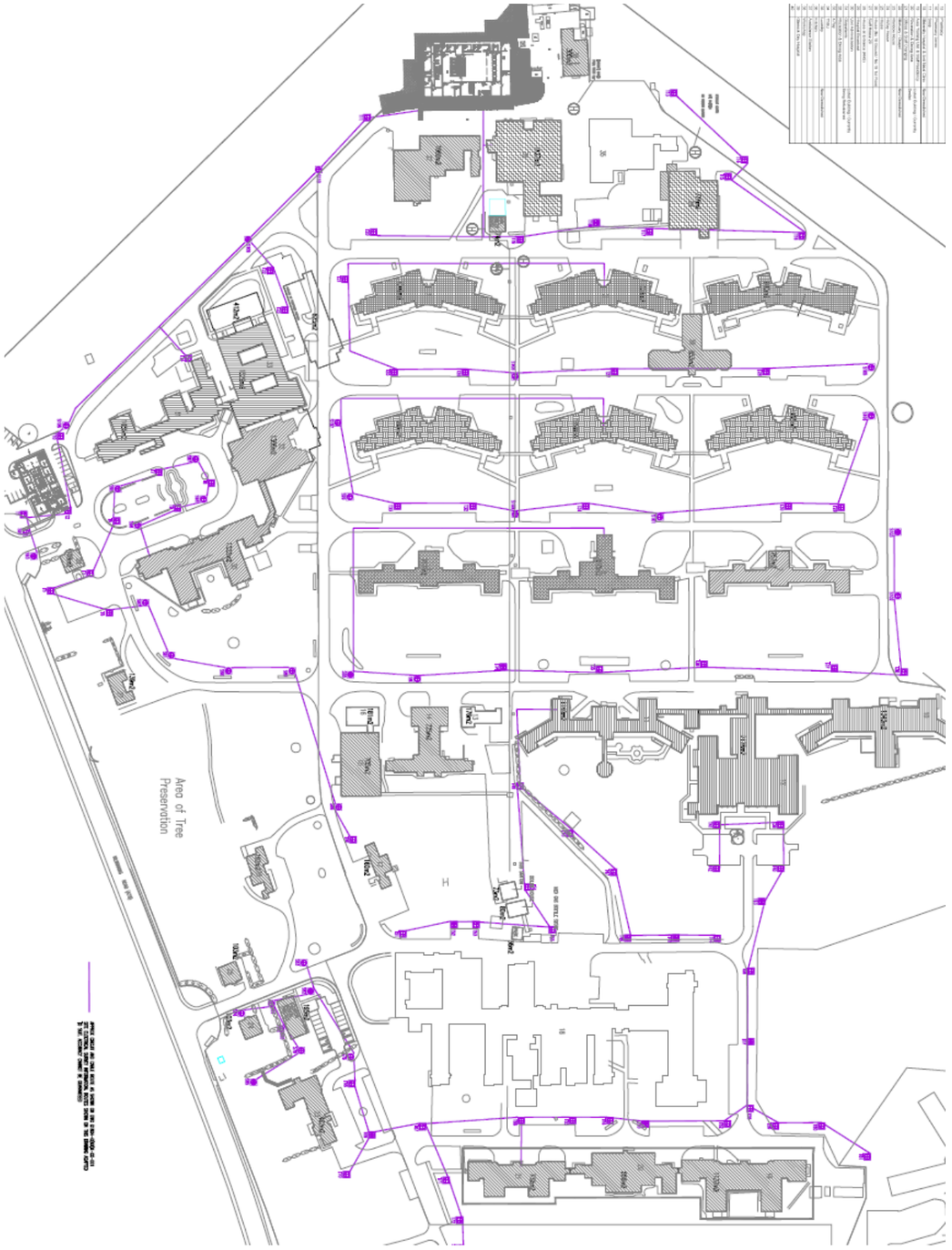
Lighting, fixed equipment and standard 13 Amp socket outlets for individual rooms will be provided from sub-metered distribution boards within each department. The number of outlet points shall be as indicated on the room data sheets.

c) Ancillary Power

Ancillary power supplies to all building services equipment will be provided via separate circuitry from the same local departmental distribution boards.

d) Lighting

Energy efficient lighting designs will be applied throughout the facility, including any feature lighting, with appropriate local lighting control systems to further enhance the low carbon design principles described above. Energy efficient building mounted external lighting, security and external signage lighting and car park/pathway lighting will also be provided.



e) Emergency Lighting

Lighting to all areas shall be designed and installed in order to comply fully with the recommendations contained within BS 5266 and shall fully satisfy the requirements of the Fire Officer and Building Regulations.

f) Fire Alarms and Detection Systems

Automatic detection, manual call points, and sounders/beacons shall be provided throughout the facility and shall comply fully with the recommendations contained within the relevant fire code and BS5389 Part 1 and shall be category L1. The design shall also satisfy the requirements of the local Fire Officer and Estate Fire Officer.

g) IT/Data/Telecommunications

Telephone and data outlets shall be installed within the facility. The Cable runs shall utilise Cat 6 UTP cabling. Outlets shall be RJ45 and serve both voice/data needs. The System will be provided taking into account the requirements of the various standards, namely; EN50173, EN50174, BS7671, BS6701, TIA, ISO, IEC 11801, FIA & BICSI.

h) Nurse Call/Communications Systems

A nurse call/communication system shall be incorporated into all clinical areas throughout the facility and shall be installed in accordance with the recommendations contained within SHTM 2015, taking into account current technologies.

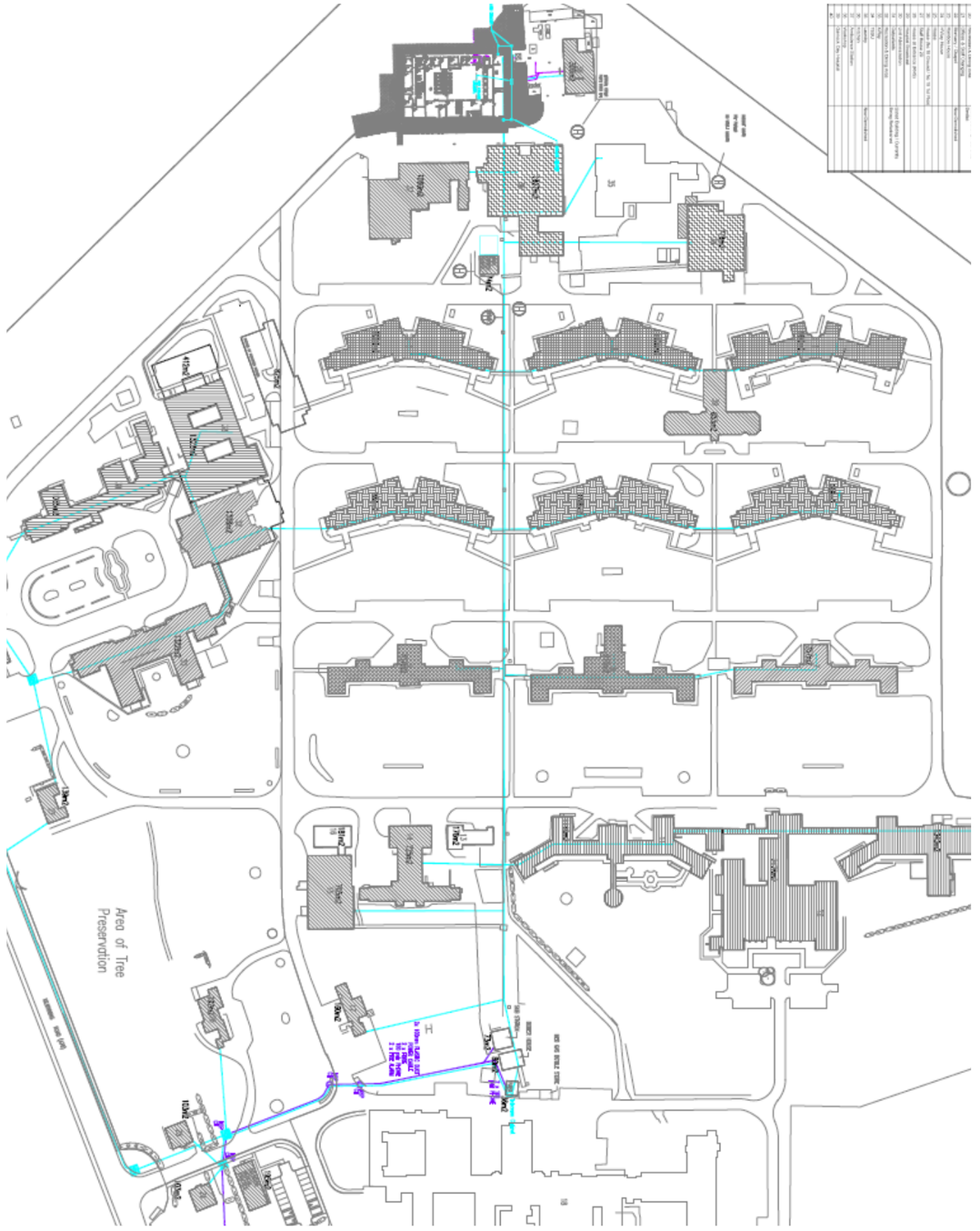
i) Security Systems

i) **Door Access Control**

A proximity card access system will be provided to selected departmental main entry doors which allow organising and maintaining access rights to predefined security zones. Video entry systems will also be provided to main entrance doors and designated departmental entrances.

ii) **Intruder Alarms**

The security system will include Intruder Detection in certain areas. Perimeter rooms and circulation spaces within the ground floor will be provided with movement detectors. The system will be zoned to allow out of hours working. Drug stores/cupboards and computer suites will be classified as High Risk and will be separately zoned to that effect.



iii) **Staff Alert/Panic Alarms**

A panic alarm system will be provided throughout the building and shall comprise of a series of infra red receivers and fixed discrete push buttons.

iv) **CCTV**

External CCTV cameras will be located in prime monitoring positions. The cameras will be either pole or wall mounted according to their location Internal CCTV cameras shall generally monitor the main hospital entrances, department entrances and principle waiting areas. Internal camera's will be of an "Overt Nature", visible to all and have a fixed line of vision.

j) Lightning Protection

The lightning protection system will include all air termination networks, down conductors, earth termination networks and equipotential bonds in accordance with BS EN 62305:2006.

k) Induction Loop

Fixed induction loop systems shall be provided for the hard of hearing to all reception desks, seminar rooms, group rooms and TV rooms. Mobile induction loop systems shall be provided for use elsewhere in the hospital.

l) TV/ Radio systems

A free view terrestrial TV system shall be provided in all bedrooms and TV rooms.

m) Earthing and Bonding

All electrical systems shall be earthed and bonded in compliance with BS 7671 and BS 7430.

5.8 Public Health Services

The following is a brief description of the individual public health services design strategies being adopted for the project;

a) Water Services

24 hour on-site cold water storage has been requested by NHS Ayrshire and Arran. This will be provided in the energy centre via a combination of raw water and filtered water potable storage tanks, with the bulk of the water stored upstream of the central filtration plant. Each tank shall be split in to two sections to allow for maintenance. The water filtration plant will be provided by either cartridge or membrane filters, depending on the whole life benefits of each option. Filtered domestic hot and cold water will be delivered within the appropriate anti-legionellae and safe working temperature ranges to all sanitary fitments within the new facility. Hot water generation will be either by semi-storage direct gas fired or indirect LPHW hot water plate heat/ calorifiers. Depending on the outcome of the sustainability feasibility report, closed circuit solar water pre-heating may be used as a pre-heat measure for the domestic hot water generation. Appropriate pipeline temperature monitoring will be fitted throughout and will provide feedback assurance via the BMS.

b) Above Ground Foul Drainage

Waste water from all sanitary fitments will be collected via the above ground foul drainage system and conveyed to suitably positioned pop-up locations and thereafter into the underbuilding civil engineering drainage system. For details of underground foul drainage and rainwater systems refer to the Civil Engineering and Architectural Design Strategies.

5.9 Partial Refurbishment of the Horseshoe Building

Available accommodation within the Horseshoe Building is being reviewed in terms of housing some of the NACH accommodation. A high level condition survey has been carried out in order to review the appropriateness of the existing services. This will be developed further once a detailed brief is available.

Appendix 3G

NDAP Report

NHSScotland Design Assessment Process – NDAP's Report

Project No/Name: AA01 - North Ayrshire Community Hospital

Business Case Stage: OBC

Assessment Type: Desktop, to update OBC stage report dated 12 October 2010

Assessment Date: October 2011

Response Issued: 14th October 2011

Preface

As this project falls within the discretionary pilot phase of design assessment within SCIM, and the design statement produced by the board was not agreed pre IA as a basis for the assessment, a highly tailored approach has been taken to the design assessment at OBC.

This report is based is on the developing 'reference' design presented on 4th October 2011, and forwarded by e-mail on 5th October 2011. It reflects the changes made in the scheme since October 2010 (when an earlier OBC stage assessment was carried out on a different design), particularly in relation to the 'essential recommendations' identified mutually with the client body as requiring significant development at that time.

The completed reference design (due mid Oct) is to be used in the NPD process and the Board have been clear that they are looking for bidding teams to take the basic arrangement of clinical spaces described in the reference design and mould them into a cohesive proposal, improving on a number of aspects identified as areas for improvement in the reference scheme. The comments below are therefore provided as advice to be communicated to the bidding team as areas where the bidders proposals should exceed that described in the reference design, and as advice to the Board in relation to the broader context.

HFS have concluded that it is too early in the design process to carry out an assessment of compliance with current healthcare guidance. However a copy of the initial 'Design Guidance Documentation Review' prepared by the PSCP has been received which appears to be comprehensive. If it is not intended that design development should continue immediately after OBC then, where practical, guidance published during the interim period should be also be considered on re-commencement of the design process.

When assessing the later stages of the design development, compliance with the following guidance documents which are available on the HFS web site will be considered to be particularly relevant to this project: SHPN 35; SHPN 37; SHPN 04-01; SHFN 30; HAI SCRIBE; 'Wayfinding'; 'Best Practice in Healthcare Design for People with Dementia' and the Disability Discrimination Act.

Joint Statement of Support

Health Facilities Scotland and Architecture + Design Scotland consider the project to be developed sufficiently to be;

SUPPORTED

With the following notes and recommendations:

Essential Recommendations

The comments below are notes of how the project has responded to the essential recommendations made previously at OBC stage, and areas for further development within these agreed areas of focus:

- **Site Circulation Diagram.** This has improved significantly with a central access 'zone' to the development, accessible from a number of directions, and rational onward circulation to wards. Whilst we consider that this point has been largely satisfied in terms of the diagram, as the design is developed the nature of the circulation should include consideration of the following issues (see also advisory recommendation below in relation to the released areas of the site).
    - An integrated strategy for landscape and movement – including the internal planning of the entrance zone - should be further developed to provide intuitive wayfinding such that people are naturally directed to the most appropriate parking area and entrance.
    - The form and nature of the entrance zone; the point of entry and first internal environment sets the ethos and impression of the facility, but is currently shown as an array of three string corridors, two with double-loaded accommodation. Surrounded by a number of spaces with no clear nature or purpose. This area requires significant definition and development.
    - The nature of the main spine corridors will require significant additional work to make them into positive experiences encouraging people to venture to the central hub/cafe. The circulation spaces on the upper floors will also require significant development to provide a suitably attractive environment.
- **Relationship of public and private areas.** The intended gradation of public to private space still results in bedrooms looking towards parking; however, the arrangement of spaces and the reduced number of access routes past bedrooms has resulted in a greater degree of privacy being possible. This point has therefore been largely satisfied in the diagram (see also notes below regarding landscaping/initial impression).
- **Initial Impression.** The revised scheme presents a number of opportunities to lessen the visual impact of the external face of the building (previously almost entirely bedrooms). The team is encouraged to maintain and develop the following:
    - the opportunity to distinguish the appearance of the central accommodation (a larger body of accommodation than previously) making it a point of focus, clearly marking the 'arrival' zone;
    - the opportunity to distinguish, visually, the day spaces and upper level gardens that are visible from the outside of the building, providing glimpses of life;
    - the arrangement of wards generally indicates support spaces at the 'outermost' face of courtyards, alongside a suggestion of small 'day' spaces (see also patient

environment below). This provides the opportunity to differentiate this area and visually connect the internal courtyards with the external landscape to the benefit of both;

- the opportunity to reveal circulation zones, allowing an understanding of the layout of the building, and a view of movement and life, prior to entering it. The massing and articulation of this element will be important in framing the initial impression of the development; a solid two storey structure will give the impression of a more unified larger scale building, whereas a lighter more glazed structure would allow the different areas of accommodation to be read separately potentially reducing the visual scale of the development.

Although a significant improvement has been made in this aspect, it has not yet been demonstrated that the external form shown is fully and properly embedded in its context (see also advisory note below on released land). The current layout reads as a building surrounded by three defensive landscape buffers and a ring of parking, into which an entrance zone has been punctured. The building form and landscape should be developed in harmony to form a public space of some amenity, connecting the hospital with the public realm; with any enclosing arms of building and landscape providing a mutually positive aspect, welcome and shelter. We continue to advocate that developing the design using a site wide concept for the development in its setting, building on recognisable typographies for this scale of development, would assist in the Board's objective of providing a welcoming impression on arrival at the hospital.

- **Nature of the patient environment.** The reference scheme has satisfied this aspect as all wards are now shown with day spaces that have the opportunity to provide a sunlit aspect together with small areas of shared accommodation in each ward offering longer views. The team are encouraged to maintain and develop such spaces to maximise their amenity both as occupiable spaces and as areas, through which, views might benefit the nature of the courtyards.

- **Value for Money.** The reference scheme shows a greater proportion of first floor accommodation, whilst also providing external space to all wards in close proximity to the ward. This aspect of the previous report has therefore been addressed.

- **Future Flexibility Strategy**. A diagram showing potential locations for additional bedrooms has been provided demonstrating that additional capacity may be accommodated without further land take, however the detail of this in terms of parking/servicing/circulation and support accommodation has not been provided. The diagram does not indicate an alternative strategy for a decrease in the scale of required facility. It is recommended that the Board provide clear instruction to bidders on the information they expect to be provided to demonstrate future flexibility in their proposals and how this will be assessed in the evaluation of the bids.

Advisory Recommendations

The Board are encouraged to consider and develop the following aspects:

- The Board is encouraged to include, in the documents issued to bidders, the Design Statement developed for the project, updated as necessary to reflect the changes in clinical planning. Having reviewed the statement against the revised design it appears that the 'non-negotiables' described for the project should be achievable, although the means of achieving them may not look entirely like the original benchmarks. In addition to the aspects noted above, additional development is recommended in the following areas:

  - The Board's Design Statement points to examples of mental health developments that demonstrate very careful consideration of the nature of the journey from

bedroom to communal space and back; with corridors being formed to provide a mediating space between room and circulation; with daylight and links to the communal areas to encourage movement; with opportunities for impromptu discussions in the corridors and unobtrusive observation (a window cill for staff to sit on rather than placing a chair in the corridor). The qualities and considerations embodied in this benchmark are starting to be addressed in the developing design and should be encouraged further in bidder's proposals.

- The developing designs should improve the connectivity between day spaces and upper level gardens to encourage use and provide better connectivity with nature, and consider the outlook of upper level gardens which current view towards the IPCU.
- We understand that the site is currently zoned for Housing and that the Local Authority have not, as yet, given any written assurance in terms of the acceptability for its continued use as a hospital. There is therefore a risk in terms of delivery that, despite this being an existing hospital site, the development may be considered contrary to policy. We understand that the Board are addressing this issue and seeking some formal 'comfort' prior to making an approach to market.

- A clear strategy for the development of the released land to the south is needed to allow design teams to develop a solution that has a well considered relationship to the developing area, facilitating co-ordination and integration of transport, movement and infrastructure. At the last assessment a few options had been described for the released land, however the reference scheme does not appear to be developed in relation to any future context beyond a prescribed new road junction. Without such a clear framework for the whole site, the project runs the risk of limiting the value of the released land and/or being negatively impacted by subsequent development.

Notes of Potential to Deliver Good Practice

The Board are congratulated for robustly revisiting the design proposals and bringing them to a point where the team are now much more positive about the prospects for the project. The nature and openness of the engagement with the design assessment process as part of the discretionary pilot phase is welcomed and applauded.

Next Stage Processes

Next Actions at Current Business Case Stage

The project has addressed the essential recommendations sufficiently to be **SUPPORTED** and this response will be verified to the CIG by the NDAP without further action needed by the Board. However, please note that it is advisable to fully discharge the Essential Recommendations early in the next phase of the development to ensure that the project is supported again at the next business case stage. Failure to adequately discharge these provisions will mean that the project may be unsupported at the next stage.

VERIFICATION CIG:

The above **SUPPORTED** status is therefore **VERIFIED.**

Signed ..... dated 14th October 2011 .

Process at Next Business Case Stage

Panel Assessment at appropriate point during development of FBC.

As advised previously, the Board are encouraged to submit – prior to proceeding with the detailed planning application - revised proposals for an assessment considering the improvements made in relation to the above agreed areas of focus, and other areas of potential. Such an assessment would be carried out by a broader panel, and would require the client and select members of their team (or bidding teams) to be present to assist in discussing and clarifying aspects of the proposals. The NDAP needs approx 3 weeks notice in order to get a panel together on an agreed date, and we would be grateful if the Board could arrange a venue on site. This could be carried out as part of the bid assessment considering competing schemes.

This report would form the basis of the response at FBC, and therefore if Financial Close is to be prior to obtaining Detailed Planning Consent, the assessment must be arranged at an earlier stage. Please keep the NDAP informed of programme and process so that the most suitable point can be arranged.

NOTES ON USE AND LIMITATIONS TO ABOVE ASSESSMENT:

The above assessment may be used in correspondence with the Local Authority's Planning Department as evidence of consultation with A+DS, **provided the report is forwarded in its entirety**. A+DS request that they be notified if this is being done to allow preparation for any queries from the Local Authority; please e-mail health@ads.org.uk . If extracts of the report is used in publicity or any other such manner, A+DS reserves the right to publish or otherwise circulate the whole report.

Any Design Assessment carried out by Health Facilities Scotland and/or Architecture and Design Scotland shall not in any way diminish the responsibility of the designer to comply with all relevant Statutory Regulations or guidance that has been made mandatory by the Scottish Government.