HIC Services: User Guide
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Document Purpose

This document will explain to existing and potential users of HIC services:

- What services the Health Informatics Centre (HIC) provides.
- How to contact HIC to discuss the potential provision of services.
- How HIC will provide the services.

Service Summary

HIC Services is a University of Dundee research support unit within the TAyside medical Science Centre (TASC) and the Farr Institute @ Dundee, in collaboration with NHS Tayside and NHS Fife. HIC Services supports high impact research through the collection and management of high quality data. HIC Services operates a secure Safe Haven environment with strong data governance for the provisioning of data to academics and other users to improve healthcare and population health. HIC Services develops bespoke software to support secure data collection, provides recruitment support for clinical trials and manages a data entry service.

Contacting HIC

Where we are:

HIC Services
The Farr Institute
University of Dundee
(Main level 5 corridor), Second Floor, Level 7
Mailbox 15
Ninewells Hospital & Medical School
Dundee, DD19SY

The Team

For information about HIC:
www.dundee.ac.uk/hic

Need to find out more?
hicservices@dundee.ac.uk
Know what you need?

**Data Linkage Service**

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**Application Development, Data Entry & Recruitment**

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HIC Data Security and Confidentiality

HIC’s first priority is to address information governance, data security and confidentiality issues. All services provided by HIC are delivered within a secure environment to ensure data is managed safely and in compliance with Data Protection legislation.

Key HIC Security Measures:

1. IT security
   a. Network separation between data & data users.
   b. Secure rooms for HIC staff.
   c. Backup & off-site copies.

2. Identifiable data are received by HIC in encrypted form and are stored and processed in secure areas on the NHS network, accessible only to HIC technical staff.

3. All data requests and releases, along with copies of all necessary approvals, are stored on the HIC Project Management System.

4. All HIC processes are governed by HIC Standard Operating Procedures (SOPs). New versions of the HIC SOPs are created in consultation with and approved by NHS Data Governance staff.

5. HIC are inspected by an external auditor annually, commissioned by the NHS Tayside Director of Public Health.

6. Researchers and other data users work within the HIC Safe Haven and sign a HIC Data User Agreement. Data users are only provided with anonymised data, unless project-specific approval is obtained by NHS Caldicott Guardian.

7. The HIC Governance Committee, chaired by the NHS Tayside’s Governance Manager, reviews the audit report, SOPs and any adverse events, recommending improvements to HIC processes and information governance.
The diagram below summarises HIC’s data management environment and illustrates how the Data Linkage Service (DLS) is managed within secure processes.

**Figure 1: Data Linkage Service Security**

Data Linkage Service (DLS)

**DLS Linkage Options**

DLS offers a comprehensive range of data linkage services to support researchers and other data users. HIC, through governance agreements with NHS Tayside and Fife, hosts a range of linkable routinely-collected administrative health datasets which can be used to identify and describe study cohorts to answer research questions. For example, answering the question “Is coeliac disease associated with increased cardiovascular disease?” HIC was able to identify a cohort of patients with coeliac disease from the test results within the NHS Tayside lab dataset, then link to prescribing and hospitalisation data to provide information about events and treatments of cardiovascular conditions for the cohort and a control group of coeliac negative individuals.
Check our website to see available hosted linkable datasets www.dundee.ac.uk/hic. We update this often as copies of new datasets are added to HIC’s portfolio.

These data can also be linked to study data specifically collected from consented patients as part of research projects. This can add value, either by adding new information not already collected or to provide a cost-saving alternative to manual data entry of some study data by providing and linking it from sources routinely collected elsewhere, e.g. lab tests carried out for the study and collected in NHS electronic systems. HIC can provide follow-up end-point data for study cohorts at the end of studies and beyond by linking to hospital events and death records.

HIC can also link to NHS, or non-NHS, datasets not already hosted by HIC, assisting with governance approvals and data sharing agreements to facilitate these novel linkages. These are often identified by data users themselves who need access to them within a secure environment to answer new research questions. HIC is developing new linkages with social services, police and education data, as well as wider NHS data.

Accessing routinely-collected data always requires permission from Data Controllers. HIC has established procedures, in collaboration with the NHS, to enable quick access to many datasets and can offer advice and guidance on accessing other data and obtaining approvals. This is part of discussions with HIC during the project scoping meeting and subsequent Data Requirement User Meeting (DRUM) illustrated in figure 4: Working with HIC’s Data Linkage Service.

**Linking HIC-hosted data**

- HIC hosts and updates linkable health data for the whole population of Tayside & Fife, Scotland – 800,000 or 16% of Scottish population, covering:
  - Community-dispensed prescribing.
  - Hospital stays, diagnoses and interventions.
  - Lab tests.
  - Deaths.
- Accurate linkage is enabled using the NHS unique individual identifier, the Community Health Index number (CHI).
- HIC maintains up-to-date prescribing and hospitalisation data, through regular updates and data feeds from suppliers.
- Extensive longitudinal data collection history - with 15+ years history on some datasets.
- Linkable into local specialist clinical data for detailed measures and events.

**Linking to your research dataset**

- Data specifically collected from consented subjects recruited for studies can be enhanced by linkage to routinely collected data, e.g. their prescribing history, other hospital events or events in other sectors such as education.
- Collecting study data is labour-intensive so, for some study-related events e.g. lab test results, assembling study data from routinely-collected NHS data records will reduce project costs.
- Follow-up of study participants for health outcomes and end points, e.g. hospital events or death, is easier and less expensive to use existing electronic health records than attempting re-contact.
Linking to external (NHS or non-NHS) data

HIC, with appropriate approvals from Data Controllers, can help access new datasets, adding missing identifiers with bespoke look-up tools if required, to enable linkage and facilitate new areas of research. This can be for project-specific use or HIC can host a copy of the new dataset, to allow future research to proceed more quickly.

HIC works closely with experts in health informatics and research methodology who can advise data users on how to make the best use of the data. HIC can also provide expertise to NHS and other government agency staff on how to safely make their data available for research, for example through the separation of dataset indexing (adding an anonymised identifier) and linking activities.

- If required, each use of data from new datasets will only happen in consultation with the data owners.
- For ongoing incremental updates of datasets, Service Level Agreements (SLAs) are negotiated with data providers which clarify mutual arrangements and agreements.

To assist HIC in providing effective support for the dataset the following information is helpful:

- A description of the contents of the dataset, purpose for which it was collected and typical uses.
- Any information about the data origins, when and how it was collected, processing and checking processes already undertaken.
- Names and versions of any coding systems used (e.g. ICD, READ or OPCS).
- A copy of any lookup tables used.
- Where possible, a description of the quality and completeness of the dataset, though HIC can also look at this.

Research Data Management Platform

HIC is developing a new automated software architecture called the Research Data Management Platform (RDMP). The main goals of the RDMP are:

- To automate the loading, storage, linkage and provision of data sets within a Safe Haven for research projects.
- To clean, transform and add meta-data and domain knowledge to each data set to make them “research ready”.
- To add additional functionality and tools to handle new data types such as images and genomic data.
- To provide a system which is fit for the requirements of research such as reproducibility and historical information, user interfaces, additional security and an audit trail.
- To provide the High Performance Computing (HPC) and specialised storage infrastructure which meets the data user’s requirements.

The new research platform processes will enable HIC to provide pre-selected, research-ready data more accurately and rapidly, with improved meta-data.
Working with HIC’s Data Linkage Service

The following flowchart illustrates the process of interacting with HIC to discuss and scope project requirements before funding is secured and, when the project is given the go-ahead, the event sequence of interactions between the project team and HIC. The numbers link with a more detailed description below the flowchart.

Figure 2: Working with HIC’s Data Linkage Service

The numbers shown in the flowchart refer to more detailed descriptions below.
1. Pre-Award Project Scoping

Contact Jim Galloway (j.r.galloway@dundee.ac.uk) to arrange a pre-award project scoping meeting to discuss project feasibility, data and approval requirements.

   a. For a service quotation, please allow 4 weeks before any grant application processing deadline to meet, assess requirements and for HIC to calculate costs and provide a quotation.

   b. To enable HIC to understand the project requirements and provide an accurate costing the following information is needed:

      i. Project title.
      ii. Project aims.
      iii. How the cohort will be defined.
      iv. Geographic areas to be covered.
      v. Whether there is linkage to external data not held by HIC.
      vi. Longitudinal data history required.
      vii. How up-to-date the data will need to be.
      viii. When the data is likely to be needed.
      ix. How the project will be funded.

2. HIC Quote

HIC will provide a detailed Data Requirements Document and Quotation based on the discussion, for agreement with the Principle Investigator (project leader) prior to submission for funding.

Please allow 4 weeks before any grant processing deadline to meet, assess requirements and for HIC to calculate costs and provide the quotation.

The quotation is cost-recovery only and is calculated on the staff time required to carry out the different required activities, with a contribution to background HIC running costs. The quote may be subject to VAT.

3. Project Start - Data Requirement User Meeting (DRUM)

Once the agreed funding has been awarded / identified contact Jim Galloway to hold a Project Start DRUM to confirm project details from the pre-award data Project Scope document and Quotation, agree a delivery schedule & project milestones, including a communication strategy for providing feedback at key delivery points. HIC will confirm the necessary approvals that will be needed, in dialogue with Duncan Heather and external governance officials, as required. This is an important meeting to help ensure efficient delivery of accurate data for the project.

- All relevant project staff to attend, in particular the Principal Investigator (PI) and the Research Assistant (RA) who will be carrying out the analysis, along with key senior and junior HIC staff who will be involved in the data extraction. This helps to reduce misunderstanding over data requirements and delivery dates.
- HIC will confirm details of the data specification from the pre-award project scoping meeting and Data Requirement Document and create a **Project Initiation Document (PID)**. This will be provided to the PI and RA for confirmation that this is the correct data extract for the study. See Figure 3: Agreeing and extracting the project dataset, below.

Delivery dates are dependent on:

- Confirmation of data requirement specification by PI and RA.
- Necessary governance approvals being obtained.
- Timely receipt of any external data required for linkage to HIC-hosted data.

**Figure 3: Agreeing and extracting the project dataset**

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**Data Requirement User Meeting (DRUM)**
Attended by:
- Senior & junior HIC Data Analysts
- HIC Governance Advisor (as required)
- Principal Investigator (PI) and Research Assistant (RA)

HIC will provide

**Project Initiation Document (PID)**
- How cohort will be identified (inclusion, exclusion criteria)
- Detailed data to be provided, within scope of original Quotation
- Delivery schedule
- Communication strategy
- Governance approvals required

PI agrees PID
PI obtains approvals

**Data release to Safe Haven**
- with counts of patient and record numbers
**Change Management**

Once this Project Initiation Document (PID) has been agreed and the project begun all subsequent requests for changes to requirements and project scope will require an impact assessment to be performed. The outcome of this process is one of the following situations:

a. A schedule slippage.

b. Additional project costs.

c. No-cost alteration to scope.

d. No impact.

e. a and b.

The PI will be asked to review the impact assessment and to decide whether they wish to proceed with the change and agree to any associated impacts to original costs and schedule.

Any delays or errors caused by HIC will be rectified at no cost to the project. HIC will hold open the work ticket for each project data release for 30 days to allow data users to query aspects of the data release and receive prompt attention. After 30 days the release will be considered validated and closed off. Queries may still be raised in relation to the release, but there may be delays in response times due to other work pressures.

4. Obtain Governance Approvals for Project

The necessary project documentation and approvals are illustrated below in Figure 4 “What approvals are needed for your project?” HIC works as a Data Processor of the data HIC hosts and manages, on behalf of the Data Controllers (e.g. the NHS). All use of data must be in compliance of HIC SOPs and other data-sharing agreements agreed with the Data Controllers.

All studies need to provide HIC with a project description, containing the project’s aims, methods and how the study cohort will be identified, to enable HIC to accurately scope the data requirements for the study and provide guidance on approvals. All project team members who will be accessing the data within the HIC Safe Haven (see section 5: HIC Safe Haven, below) will need to sign a HIC Data User Agreement.
Figure 4: What approvals are required for your project?
The project-specific governance approvals required will vary depending on the study’s design and methods, for example:

- A study that will link HIC-hosted data to a clinical dataset not currently hosted by HIC to answer a research question using statistical analysis anonymised data, will require:
  - Caldicott approval to allow HIC to receive an extract from the new dataset.
  - NHS R&D approval of the project’s potential research use of NHS resources.

- A study that will require access to patient-identifiable data, e.g. to review patient notes, or for recruitment contact purposes (out-with HIC’s securely-managed process – see section below: Secure Patient Recruitment via General Practice), will need:
  - Project-specific Caldicott Guardian approval.
  - A recruitment project, involving patient contact, would also require formal ethics review, which can be applied for at: https://www.myresearchproject.org.uk/.
  - Sponsor approval. Contact TASC at tasctayside@nhs.net

- All research projects, using NHS data, will need NHS R&D approval.

- A simple audit using anonymised HIC data could potentially require no project-specific approvals.

5. HIC Safe Haven

To protect data confidentiality, satisfy public concerns about data loss and reassure Data Controllers about HIC’s secure management and processing of their data, HIC has implemented a remote-access “Safe Haven” environment. In this model data are not released externally to data users for analysis on their own computers but placed on a server at HIC, within a restricted, secure IT environment, where the data user is given secure remote access to carry out their analysis.

Data users can re-assure funders, sponsors, regulators and publishers that secure measures for data management are in place for their project and the safe haven also offers a central collaborative workspace for the project team, where analysis can take place on one copy of the data. This is particularly useful for geographically dispersed project collaborations.

Members of the project team who will need access to the dataset will need to be identified to HIC at the DRUM, along with their workplace affiliation and email address.

HIC will contact each individual to provide the current version of the HIC Data User Agreement (DUA) to read and sign, if a current copy is not signed already. HIC will initiate a request to set up access to the safe haven.

Once the DUA has been signed and project governance approvals are in place HIC IT Administrators will contact each person to set up project-specific access to the HIC Safe Haven by providing an initial password (to be changed at first login) and instructions on setting up access.

HIC will then make the data available, within the shared project folder in the Safe Haven, to the project team.
Figure 5 below illustrates the HIC Services Safe Haven, with different data users from the project team remotely accessing the data held centrally on a HIC server by logging into the secure Citrix environment. The diagram also shows that the central analysis area is also separated from the identifiable datasets from which the anonymised research data was extracted.

**Figure 5: The Safe Haven Environment**

Data users will be remotely logging onto a secure server located within HIC to access their project data and perform analysis, without being able to copy or remove the data from the secure central server. Data users can securely access this server from anywhere that they have installed the plugin. All the common tools required for the analysis are provided for use within this environment. The System Administrator will provide details about current available software and versions on request.

The system is locked down – i.e. data users cannot print or move data in or out of the Safe Haven, access the internet, or their own hard drive. Analysis results for output are checked for non-disclosure by a HIC Data Analyst before release to the data user outside the safe haven.

Customised stats codes, libraries etc. can be imported to a user’s personal folder, once security-checked by a HIC Data Analyst, via the System Administrator. This will enable data users to utilise previously-developed tools for their analysis. Data users can make copies available to project collaborators via the shared project folder if required.
**When using the Safe Haven**

- Project data will be located either on the Z: Drive, or in a specifically named project folder on the P: Drive, which can be accessed through Computer in the Start Menu. All data must be saved to these locations.

- “Shut Down” or “Log Off” must always be selected when finished, rather than just closing the session.

- For any connection errors the troubleshooting guide, available within the Safe Haven, provides suggested solutions.

**For enquiries regarding output release, data-related issues or any technical issues contact:**

hicsupport@dundee.ac.uk

**Output disclosure control**

No individual-level data are permitted to be removed from the safe haven by data users. Only analysis outputs e.g. reports, summaries, aggregates, graphs etc. may be removed. To enable an output file to be removed the data user will move the file to the output directory within their safe haven personal directory. Between 9-11am the next working day the output file(s) will be reviewed by HIC and, once verified as not containing individual-level data, emailed to the data user.

**6. Data Archiving**

Once the project has reached its end date HIC will liaise with the study team to ensure that they are finished with the data. If they are not, the end date will be updated accordingly within the PM System Safe Haven.

When the data user confirms that their project is completed the project dataset will be removed from the Safe Haven and archived for 12 years. The dataset can be made available again on request if necessary, with any applicable new approvals. After 12 years the data will be reviewed by the HIC Governance Committee to authorise either holding it longer, or deleting it.

The archived data project folder will contain:

- The original data supplied for the study.

- The project folder from within the Safe Haven. This should also contain any data user analysis code to enable the study to be re-run if necessary, e.g. to prove findings.

- The project folder used by the HIC Data Analyst to hold any requirements, code etc.

- Extracted version of any temporary database tables relating to the project. These will also be removed from production servers.
Other HIC Services Research Support

Summary

HIC offers a range of integrated research support services, building on existing teams and expertise in collecting, managing and providing information within a secure environment. These follow the life-cycle of a typical data-collecting research project, as illustrated in the flowchart below “Supporting the Recruitment Process” and can be provided as a comprehensive support package or as individual services.

The services HIC can provide are:

- Providing aggregate figures of study feasibility and potential study recruitment from HIC data sources. This is provided as part of the Data Linkage Service (DLS) by applying study inclusion and exclusion criteria against HIC data sources across the Fife and Tayside population.

- Preparing and sending bespoke project recruitment mailings and questionnaires, using dedicated volume print, fold/insert equipment.

- Tracking the entire recruitment process on the online HIC Recruitment Tracker system. This allows data users to monitor progress of the contact/mailing/response process and is customised for each study.

- Designing bespoke web-based data collection software tools ranging from simple questionnaires to secure NHS clinical collections, Scotland-wide disease-specific registers and large multi-site EU data collections.

- Data entry of project data from paper forms, or adding missing data to study datasets, e.g. CHI. Scanning and shredding paper data, e.g. consent forms. HIC follows secure transfer-of-custody procedures with the receiving and returning of paper data.

- Providing follow-up end-point data for study cohorts at the end of studies and beyond by linking participants to hospital events and death records.
Figure 6: Supporting the Recruitment Process
The flowchart shows how HIC can provide services over the lifecycle of a typical data-collecting project, from early estimates of project feasibility, through setting up data collection tools, patient-contact recruitment mailing and data entry of project data, to follow-up end-point data at project end and beyond.
Secure Patient Recruitment via General Practice

HIC works closely with the Scottish Primary Care Research Network (SPCRN) to enable patient recruitment across Tayside, Fife and beyond. HIC also supports recruitment through specialist clinics at Ninewells hospital and directly from consented patient registers. These can all be managed by HIC and progress communicated with the research teams through the HIC recruitment tracker. HIC prepares and sends bespoke project recruitment mailings and questionnaires, using dedicated volume print, fold/ insert software and equipment.

Figure 7: Secure Patient Recruitment via General Practice

This flowchart shows how HIC can facilitate study recruitment while maintaining the confidentiality of potential participants, until they have consented to be approached directly by the study team.

The HIC Recruitment Tracker

The tracker is a web-based software application developed by HIC for tracking patient recruitment:

- From the initial stages of cohort identification.
- Through enlistment of GP Practices.
- Sending patient invitation letters and into study participation.

The research team do not see any participant names/addresses until a positive response is received at HIC and updated on the tracker, which releases the contact details to the research team.
This automated, web-based system will ensure it is quick and easy for study team members to track progress of their study recruitment, potentially through multiple recruitment channels (e.g. GP practices, clinics), whilst keeping patient data secure.

**Bespoke Software and Web-based Data Collection**

HIC can provide a secure data collection system, as part of a one-off research project, or for more extensive longer-term data collection, e.g. NHS-based clinical data collection and disease registers. HIC’s existing software development and data management experience; access to both NHS and University networks; secure systems and environments; familiarity with NHS data and research environments; makes HIC well placed to provide a range of web-based and other data-collection solutions. HIC can create and securely host:

a. Study questionnaire data entry forms, either web-based or paper-based (or both), with OCR scanning and quality checking of entered data.

b. NHS-network clinical data collection, to support the creation of clinical systems where clinicians are struggling to manage patients with paper-based records, while also creating a valuable disease-specific research data resource. These NHS web-based systems can be used Scotland or UK-wide between collaborating clinicians, creating wide data collections, with local-specific access controls.

c. Large, multi-centre data collection through web-based software applications, with online feedback report capability, e.g. EU-wide data collections and disease registers.

**Data entry**
HIC manages a dedicated data entry team within a Clinical Information Bureau (CIB) unit who carry out:

a. Project-specific data entry.
   i. Adding missing data, e.g. CHI numbers, GP directions/dates to prescribing dataset for individual study cohort.
   ii. Patient paper record review and data entry.
   iii. Entering of study questionnaire results.

b. Clerical support to studies.
   i. Processing mail-outs to potential study participants.
   ii. Project paper scanning and shredding, e.g. consent forms.

HIC offers a standard QC method, which will be included in estimates. This involves, unless the project specifies differently, error-checking the first 10 electronic records entered (check-run = 10). If all items are correct then sampling starts, where every 15th electronic CRF is error-checked (check-rate = 15). HIC will carry out 100% checking of all identified primary data points.

HIC focuses on early training to ensure good quality of data entry, with the dataset designer and someone knowledgeable from the project team to attend initial training, with early feedback about any issues after initial data entry.

A report of data entry quality will be provided at the end of data entry and at agreed stages throughout the project containing information about the QC method used and number of:

a. Records entered.

b. Records checked.

c. Errors found and corrected.

HIC provides a transfer of custody template to be used when transferring batches of paper data to HIC for data entry or scanning / shredding, to ensure an accurate record is kept of paper data deliveries.

**Working with other HIC Services**

The following flowchart illustrates how to engage with HIC Services, from initial contact to enquire about potential HIC project support, through more detailed requirements gathering and agreeing project details and quotation, to project start, obtaining approvals and interacting with HIC as the project progresses.
1. Pre-Award Requirements and Quotation Meeting
For HIC Services support involving the supply of software, a database for data collection, mailing support or data entry contact Keith Milburn (k.milburn@dundee.ac.uk). He will arrange a pre-award requirements meeting to discuss and agree requirements and provide a quotation.

Please allow 4 weeks before any grant processing deadline to meet, assess requirements and for HIC to calculate costs and provide the quotation.

The quotation is cost-recovery only and is calculated on the staff time required to carry out the different required activities, with a contribution to background HIC running costs. The quote may be subject to VAT.
2. Project Requirement Details

To enable HIC to understand the project requirements, anticipate what governance approvals may be required and provide an accurate costing, the following details will be required for each service component:

Mailing of Patient Recruitment / Questionnaire Materials

a. Project title.

b. How will mailing targets be identified? What data will HIC or the project team be processing for the project, what governance approvals will be required and how will the project potentially fit within the HIC recruitment tracker system. Common-used data sources:
   i. From a HIC data search.
   ii. From a GP record search by Scottish Primary Care Research Network (SPCRN) staff.
   iii. From secondary care clinical records.
   iv. From a consented patient register.

c. Number of anticipated mailings.
   i. Usually a recruitment target, multiplied by an anticipated response rate.
   ii. Can be assisted by a review of the potential target group via HIC dataset aggregates.

d. Frequency of mailings – e.g. reminder letters or different mailings to different study groups.

e. Format of mailings:
   i. Contents of envelope, e.g. mail-merged letter, patient-information sheet, consent form, reply envelope, questionnaire, size of envelopes, colour/black & white.
   ii. Will the documents be produced by HIC, or the study team?
   iii. HIC will provide preferred format templates to allow low-cost, efficient mailing within HIC-system constraints.

f. Will responses come back to HIC, for tracking through the HIC tracker?

g. When is the project likely to go ahead?

h. How will the project be funded?
Bespoke Software and Web-based Data Collection
a. Project title.
b. Project aims & purpose.
c. Detail about what data is to be collected.
d. Software & database capabilities.
e. Output reports required.
f. Network hosting options – e.g. within NHS or University environments.
g. User access security requirements.
h. Data linkage to other data.

Data Entry
a. Project title.
b. Number of data collection phases.
c. Total expected number of data entry forms.
d. Number of and type of fields (e.g. tick-box or free text).
e. Method of delivery of forms to HIC.
f. Anticipated data entry start date, for each data collection phase.
g. Method of Quality Checking (QC).

3. Project start
Once the agreed funding has been awarded / identified contact Keith Milburn to hold a Project Start meeting to confirm project details, delivery schedule & project milestones and confirm necessary approvals that will be needed. This is an important meeting to help ensure efficient delivery of HIC's services to the project.

All relevant project staff to attend, in particular the Principal Investigator (PI) leading the project and key staff who will be involved in the project.

HIC will confirm details of the work specification from the quotation with the project team, to ensure the work is still within the original scope. HIC will produce a Project Initiation Document (PID) providing the agreed details of the work being provided and agreed delivery time-lines.

A project point-of-contact person at HIC will be appointed for on-going feedback and communication with project staff. A communication strategy will be agreed between HIC and the research team to provide feedback at key points identified during the provision of the HIC service. A web-based customer portal is under development to allow service users to interact with HIC to report issues and receive feedback at key milestones.

4. Obtain Approvals
HIC will advise on what governance approvals are required to allow to HIC to provide the services. If specified in the quotation HIC will obtain the approvals, in consultation with the research team. For software developments this process can run in parallel with the development phase, before any actual data is processed.
Change Management

Once this Project Quotation has been agreed and the project begun all subsequent requests for changes to requirements and project scope will require an impact assessment to be performed. The outcome of this process is one of the following situations:

a. A schedule slippage.
b. Additional project costs.
c. No-cost alteration to scope.
d. No impact.
e. A and b.

The PI will be asked to review the impact assessment and to decide whether they wish to proceed with the change and agree to any associated impacts to original costs and schedule.

Any delays or errors caused by HIC will be rectified at no cost to the project.