Diabetic Retinopathy Screening Services in Scotland: Outline Vision of a National Service

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1. Background

1.1 To assist the regional planning process, this paper outlines a strategic approach to implementation involving a number of regional centres for Scotland. This paper has been discussed with the NHS Board co-ordinators for diabetic retinopathy screening, SEHD, the DRS Collaborative Network, the Scottish Diabetes Group and the Regional Planning Groups and the wider NHS Scotland Diabetes network in a meeting on 26th August 2004. This is now the final version of the paper and is entitled *Diabetic Retinopathy Screening Services in Scotland: Outline Vision of a National Service* dated March 2005.

1.2 In this paper the term "national" is used to refer to all Scotland; the term "region" is used to refer to broad geographical areas wider than any single NHS Board area; and the term "local" is used to refer to arrangements for an NHS Board area or within individual NHS Board areas.

1.3 The primary objective of offering eye screening as part of the routine care for people with diabetes is the detection of referable (sight-threatening) retinopathy. This paper builds on the key elements of the Scottish Executive Health Department (SEHD) circular, HDL (2003)33, and specifies the way in which eye screening for diabetic retinopathy is to be implemented in Scotland – that is through implementing a quality assured screening programme based on digital retinal photography and national standards.

1.4 All patients with diabetes aged 12 and over in Scotland are to be offered diabetic retinopathy screening each year using digital photography within an organised NHS Board programme that meets the recommendations of the Health Technology Assessment report published in 2002 by the then Health Technology Board for Scotland (HTBS) (now part of NHS Quality Improvement Scotland) and the report produced by the Diabetic Retinopathy Screening Implementation Group published in June 2003. The objective is to complete this process and have a comprehensive programme fully operational throughout Scotland by end March 2006.

1.5 As diabetic retinopathy screening is just one component of diabetes care, the national screening programme will be integrated with routine diabetes care. As is explained later in this paper, the Diabetes Managed Clinical Network which is being established in each NHS Board will have overall responsibility for monitoring the full range of diabetes services in the NHS Board's area, in accordance with the Scottish Diabetes Framework. That includes implementation of the diabetic retinopathy screening programme (paragraph 3 of HDL (2003)33).

1.6 Tight glycaemic control and careful blood pressure control both reduce the development and progression of diabetic retinopathy in type 1 and type 2 diabetes. In addition to clinicians responsible for ongoing diabetic care, people with diabetes will be fully informed of all results, not only of sight-threatening retinopathy requiring referral to the ophthalmologist but also of any retinopathy. Where suitable infrastructure exists, compressed images of retinal photographs for educational purposes only will be available to the relevant diabetes healthcare professionals through the main electronic diabetes patients' records (SCI-DC).

The HTBS report identified different organisational models for eye screening founded on NHS Boards arranging screening for their own resident populations. Since then, individual NHS Boards have made considerable progress in implementing diabetic retinopathy screening. Over the same period there have been policy developments that are currently having a considerable impact on the organisation of NHSScotland. NHS Trusts have been dissolved and replaced by single system working within NHS Boards. The 2003 White Paper "Partnership for Care" emphasised the need for all organisations comprising NHSScotland to work together as a single health system and signalled a new "duty" of regional planning on NHS Boards. The duty of co-operation is included in the National Health Service Reform (Scotland) Act 2004 currently being considered by the Scottish Parliament.
(Ref: www.scotland-legislation.hmso.gov.uk/legislation/scotland/acts2004/20040007)

1.7 Three NHS Board Regional Planning Groups have been established to bring together NHS Boards in broad geographical groupings – the North, West and South East & Tayside regional planning groups. Work is underway within NHS Boards, overseen by the three Regional Planning Groups, on developing the "rules of engagement" that NHS Boards will adopt in working together to fulfil the new duty placed on them. This collaborative working will help to address issues of affordability and sustainability of the comprehensive range of health services needed by the population in the light of factors such as specialised skills and constraints on legal working hours / rotas.

1.8 The July 2003 HDL on diabetic retinopathy screening required NHS Boards to "work with Regional Planning Groups to explore the potential for joint working and sharing of facilities". All three Regional Planning Groups have subsequently given their support for collaborative work among NHS Boards to develop arrangements involving sharing of resources - e.g. clinical grading, call recall administration, mobile and fixed facilities and cameras - in order to help meet locally the NHS QIS standards, as well as for reasons of efficiency.

1.9 At the same time, a further national initiative needs to be taken into account with regards to workforce planning – photodynamic therapy for age related macular degeneration. On 24 September 2003 the National Institute for Clinical Excellence (NICE) published Guidance www.nice.org.uk on Verteporfin photodynamic therapy (PDT) in wet age-related macular degeneration (AMD). Please see Annex E NICE Guidance on the use of PDT for age related macular degeneration for further information.

1.10 The retinal specialist ophthalmologists who have the expertise to identify and treat AMD are the same staff whose skills are required in level 3 grading and quality assurance for diabetic retinopathy (see Section 3.3.4 Impact on Ophthalmology). Hence it is important that workforce planning for both service developments takes into account the likely demands on this particular skill group.

2. Roles and Responsibilities

2.1 **NHS Boards:** NHS Boards are responsible for ensuring that the service provided through the diabetic retinopathy screening programme meets the needs of their residents and the NHS QIS standards, and is integrated within wider care for people with diabetes. To ensure a consistent and equitable approach across Scotland, a common national service specification must be used to govern the provision and monitoring of diabetic retinopathy screening services in NHS Boards (reference DRS Standard 1b).

NHS Boards should adhere to a national service specification which will include the following:

- audit
- training
- quality assurance
- information for people with diabetes
- call-recall
- photography
- grading
- reporting
- follow-up
- treatment

NHS Boards must ensure that their Diabetes MCNs have arrangements in place to ensure that this specification is monitored and met. This national service specification will be incorporated within the DRS Manual

2.2 **NHS Board Chief Executive (CE):** As Accountable Officer for the NHS Board, the Chief Executive has overall responsibility and accountability for the delivery of comprehensive, quality assured, retinopathy screening for residents of their Board area with diabetes aged 12 and over. The Board Medical Director clearly has an important role in supporting the Chief Executive.

2.3 **Diabetes Managed Clinical Network (MCN):** Each Board's Diabetes Managed Clinical Network is responsible for monitoring the full range of diabetes services in that Boards area in terms of quality, access, convenience and co-ordination. Managed Clinical Networks allow patients and clinicians to take responsibility for the development of services in a coherent and integrated way. That integration is achieved by making sure that all of the health professionals involved in the provision of services for those with diabetes are included in the Network. That includes those responsible for the DRS programme. The Network can then provide multi-disciplinary advice on service delivery. In keeping with the need, as set out in the HDL(2003) 33, for the local DRS implementation plan to develop as part of the diabetes MCN, each Board's DRS Coordinator should be a member of the Executive Group of the Diabetes MCN. This will allow the MCN to build on the DRS arrangements already in place in its area, while ensuring these are fully integrated with the rest of the diabetes services. Local accountability and governance arrangements are unchanged by the fact of working as part of a Managed Clinical Network, as is clear from Appendix 3 to HDL(2002)69. The Quality Assurance programme for each MCN, approved by NHS Quality Improvement Scotland, incorporates this approach.

2.4 **NHS Board Co-ordinator:** The Board DRS Co-ordinator is an individual nominated by the NHS Board Chief Executive, to coordinate and monitor the provision of the DRS Programme within their NHS Board. It is important to note that the delivery of DRS will sit within the same management structure as with other services within each NHS Board. NHS Boards are required to clarify the accountability and responsibility within their line management structure.

NHS Board Coordinators could have a managerial, clinical or public health background. They may not necessarily hold the same post within each NHS Board (e.g MCN Lead Clinician). They should however be the most appropriate individual within the NHS Board to co-ordinate the management of the service to ensure that:

- all diabetes residents over 12 years of age within the NHS Board area are invited to attend for eye screening once a year;
- the eye screening service provided for residents meets the quality standards published by NHS QIS; and

- the eye screening service is integrated with the rest of diabetes care as recommended in the Scottish Diabetes Framework.

The NHS Board Co-ordinator will be specifically responsible for working within the diabetes managed clinical network to co-ordinate the planning and provision of eye screening as part of diabetes care for residents of the NHS Board area, across hospital and community services. Consideration should therefore be given to the NHS Board Co-ordinator chairing a DRS Sub-Group of the diabetes Managed Clinical Network. The NHS Board Co-ordinator needs to manage the provision, and monitor the performance, of services to the residents of the NHS Board across all organisations involved. Some of the functions may be delivered within adjacent NHS Board areas rather than within the local health system and some may be managed by other members of local NHS Board staff, but the NHS Board Co-ordinator is accountable to the NHS Board CE for the service provided to residents of the NHS Board area.

2.5 **Lead Clinician of a Regional Service:** Each Regional DRS service should be headed by a Lead Clinician, who should be a suitably qualified health professional and have a significant commitment to diabetic retinal screening. The Lead Clinician will be responsible for providing leadership and management of all elements of the DRS Regional Programme and consideration should therefore be given to the Lead Clinician being a key member of the Executive group of the diabetes Managed Clinical Network. The Lead Clinician would normally be accountable to the Medical Director of their NHS Board.

2.6 **Regional Screening Manager:** The Regional Screening Manager will be accountable to their designated line manager for organising and co-ordinating the day-to-day screening service across the region. This may involve liaising with local call/recall offices. Their main responsibilities will include: organising & running of the call/recall system; organising quality assurance for graders and cameras; sending grading results to GPs, diabetes clinics and ophthalmologists, where relevant; and ensuring results and, where possible, images are linked into the Regional Diabetes Register and the Screening Programme Database.

2.7 **General Practitioner:** General Practitioners have a responsibility for maximising the percentage of patients with diabetes who have a record of retinal screening in the previous fifteen months (maximum threshold 90%) as detailed in the GMS contract (2003). Achievement of these quality indicators will involve maintenance of an accurate register of people with diabetes, and follow up of non-attenders.

2.8 **Scottish Executive Health Department (SEHD):** The Scottish Executive Health Department sets policy for the National Health Service in Scotland. SEHD advises Parliament and answers to Parliament on health issues. It has representation on the National Screening Committee, which is an advisory body to all 4 Nations' Health Departments.

2.9 **National Service Division:** NSD is responsible to SEHD for the procurement and implementation of national software to support Diabetic Retinopathy Screening. NSD is also required to liaise with users to assess training requirements; commission centrally on behalf of NHS Scotland appropriate training and proficiency testing; and set up the DRS Collaborative. NSD is responsible for supporting the DRS collaborative network and facilitating exchange of information between NHS Boards in order to aid in the implementation of a National DRS Programme by March 2006.

2.10 **DRS Collaborative Network:** DRS collaborative network has been established under the auspices of NSD. This network is directed by an Executive Group and comprises individuals from NHS Boards, various relevant professions involved in the retinal screening programme, and patient representatives. The remit of the Executive Group is to support networking opportunities, shape operational policies and oversee quality assurance. Organisation chart, remit and membership of the groups in the DRS Collaborative Network can be found on the NSD DRS Programme website www.show.scot.nhs.uk/nsd/services/drs

2.11 **Scottish Diabetes Group (SDG):** The Group is responsible to SEHD and Ministers for nationally monitoring the integration of the DRS network with the overall implementation of the Scottish Diabetes Framework. Representatives from the DRS Collaborative Network, such as the DRS Lead Clinician, are members, of the SDG. The Scottish Diabetes Group will receive regular reports on progress from the DRS Collaborative Group through the DRS Lead Clinician, and through its Managed Clinical Network Sub-Group.

3. Overview of the Proposed Screening Service

3.1 For the Patient

To patients, the screening service will be an integral part of their diabetes care involving a regular diabetic eye check using a digital photograph of the retina. An invitation to attend for an eye screen will be sent automatically each year – or more frequently if recommended by the screening programme – to those aged 12 and over.

For most people with diabetes the invitation will be to either arrange or attend an appointment at a location which will be dependant upon what is most convenient for the patient and how screening is organised locally by the NHS Board. The clinic could be at their local GP practice, community centre, or optometrist where a photograph of the retina will be taken by a digital camera. In some circumstances, the invitation may be to attend eye screening in a hospital diabetes clinic as part of the annual diabetes review, this will be if the patient finds it more convenient to do so, or lives within the local catchment area of the clinic. The aim is to ensure that patients need not travel far to attend the appointment or, if attendance at a hospital clinic is required, that unnecessary repeat visits are avoided. Patients will have the option to indicate their preferred screening location, so that by default they will be sent invitations to attend this location for screening. At all times, the appointment is changeable if the patient wishes a more convenient location, date or time to attend. NHS Boards should ensure local transport is arranged for individuals who have mobility issues.

A letter reporting the result of the screening test will be sent to the patient, within 20 working days of the appointment. If there have been technical problems with the initial photograph and a further investigation is required, patients will be invited for slit lamp examination (a result letter will then be sent to the patient within 20 working days of this examination).

The patient's GP and diabetic care specialist will also be sent a letter showing the results from screening; and information on any necessary referrals (i.e. slit lamp and/or ophthalmology).

In all cases the screening result will be one of the following:

- **No retinopathy** –no need for further action until next annual screen; the patient is informed they have no diabetic changes to their eye(s) and that they will be called back for screening the following year
- **Mild retinopathy** - no need for further action until next annual screen; the patient is informed they have some slight early diabetic changes to their eye(s), they do not

require treatment at the present time and that they will be called back for screening the following year.

- **Observable maculopathy/ observable background retinopathy** – the patient needs to be screened in 6 months; the patient is informed they have some diabetic changes to their eye(s), they do not require treatment at the present time and that they will be called back for screening in 6 months to monitor the changes
- **Referable maculopathy/ referable background retinopathy/ proliferative retinopathy**– the patient is referred to an eye specialist in a hospital – usually the local District General Hospital, for further investigation and, if required, treatment; the patient is informed there have been diabetic changes to their eye(s), and that they have been referred to an eye specialist who will assess if treatment is needed.

3.2 For Staff

The provision of routine screening as outlined in this document will require close collaborative working across professional and geographical boundaries, as well as across hospital and community services. Integration of the DRS Programme with the other responsibilities of each NHS Board's Diabetes Managed Clinical Network will help to secure this multi-disciplinary working.

To make the best use of scarce skills and resources, this paper proposes a regional approach to service provision rather than every NHS Board seeking to provide the full range of expertise required to provide comprehensive, quality assured retinal screening for their local populations.

The model envisaged is of local service delivery supported and facilitated by a number of regional centres that each serves several NHS Board areas. Details on the actual services provided by these regional centres are set out in the following paragraphs. It is proposed that they should perform two main functions:

- "grading of images" – to ensure that patients have as reliable a result as is possible so that they are neither falsely reassured nor falsely alarmed, to reduce unnecessary referrals to ophthalmology, and to enable quality assurance of a sample of photographs examined by local "graders". (For more information see 3.3.2 Regional Grading Service)

- the organisation of "call/recall" arrangements – issuing invitations to screening and organising screening clinics. (This draft outlines 3 options for this function ranging from the regional centre providing the full call /recall service; to the regional centre overseeing and co-ordinating delegated appointment booking to local NHS Board based screening centres. For more information see 3.4.1 Call/Recall Centres)

3.3 Pattern of Service

3.3.1 Regional Centres

As outlined above, it is proposed that expert grading and the regional organisation of diabetic retinopathy screening will be through regional centres. Given that the role of regional centres is to provide advice on photographs taken elsewhere (images being transferred electronically) and to issue invitations, plan the movement of mobile cameras and undertake other administrative functions, patients will not need to attend the regional centre. The only circumstances in which patients would attend a regional centre would be if the regional centre happened to be located in the same place as a hospital eye clinic, and if the patient lived in the local catchment area of the clinic. The location of regional centres does not therefore affect patient care.

Decisions on the number and location of these centres will however need to take into account the availability of the required skilled staff, the adequacy of IT links to handle the large volume of data involved in transferring images, and the need to have local knowledge and close working relationships with NHS Boards, hospitals and primary care practitioners in the entire region served. This is because, although grading will be delivered through regional centres; photography, slit-lamp examination for technical failures and management of patients with referable retinopathy will be delivered locally in each individual NHS Board.

Experience with other national screening programmes is that splitting the populations of individual NHS Boards between more than one regional centre is impractical. It is therefore proposed that each NHS Board area should be aligned in full to one Regional Centre.

The following criteria need to be considered when deciding where a Regional Centre should be:

- geographical availability of critical workforce;
- network IT infrastructure to support the DRS software;
- diabetes population (for approximate population per NHS Board area please see Annex B Current planned DRS Service - Map of Scotland- population numbers listed are taken from Annex C of the Diabetic Retinopathy Screening Implementation Group Report and are illustrative rather than absolute as the prevalence of diabetes is continuing to rise);
- and available accommodation.

3.3.2 Regional Grading Service

Each Regional Centre will provide specialist clinical support, together with some administrative support for the regional grading service, specifically:

- grading of images;
- referral of patients, when required to the appropriate local health board ophthalmology service;
- referral of patients, when required for slit lamp examination for technical failures
- clinical co-ordination, facilitation of professional networking across region;
- a focus for training/continuing professional development for staff involved in screening within the NHS Board areas covered;
- quality assurance of the retinal screening programme in the geographical area covered;
- recording results and compressed images (dependent on the network infrastructure) on SCI-DC;
- collating images referred by level 1 and 2 graders for assessment by level 3 grader; and
- refer patients who require further investigation or treatment.
- issue reports to GPs/diabetologists

In this way, the regional centre will facilitate multidisciplinary team work, skill mix, training, and quality assurance. Concentrating skilled staff in the same location will enable all levels of graders to learn from and support each other. Furthermore, a regional centre will facilitate the delivery of training and continuing professional development, a process vital to the success of the programme. A regional centre will enable grading to be performed by relatively few individuals thus minimising the number of images that have to be double read for quality assurance purposes by a level 3 grader (see section 3.3.4

Impact on Ophthalmology)

The benefits of such an approach include concentration of skilled staffing resources, efficiencies of scale and working practices, the opportunity for patients to be offered appointments in a location that suits them and their location of work while their records can return via the national software to the SCI-DC database in Dundee to be accessed locally by their GP/ diabetologist/ hospital clinic when required.

Patients with observable results (observable diabetic maculopathy, observable background diabetic retinopathy) will be recalled for 6 monthly screening or where not practical, referred to ophthalmology. In Grampian, in the first 18 months of screening, 2% of patients had observable results compared with 3% who had referable retinopathy (referable diabetic maculopathy, referable background diabetic retinopathy, proliferative diabetic retinopathy). Referring patients with observable results to ophthalmology will increase referrals by 40% requiring additional funding to ophthalmology.

3.3.3 Referrals for Slit Lamp Examination

There are two situations where a patient's image can be ungradeable. These are:

- technical – where there was an operational problem with the camera, or;
- patient related – where a patient may have catarracts or other eye symptoms (making it difficult for a clear image to be taken)

in both circumstances, a referral for a slit lamp examination will be necessary. As mentioned in previous paragraphs this will be done as locally as possible to the patient and, in some cases, may be within the regional centre.

In NHS Boards not hosting a regional centre it is still envisaged that patients with ungradeable images will be examined locally by slit-lamp. Depending on the needs of the population and the location of the NHS Board this will be accomplished in a variety of different ways:

- Some NHS Boards, such as the island NHS Boards, might wish to refer patients with ungradeable images directly to ophthalmology. This would require additional funding to ophthalmology to support the increased workload.

- Depending on location, some NHS Boards might wish to use visiting, quality assured, slit lamp examiners from the adjacent regional screening centre. Slit-lamp examination would occur, as in NHS Boards hosting the screening centre, at a few fixed sites where patients would then be screened.

- slit-lamp examiners could be located outside the host NHS Board as long as they comply with the slit lamp quality assurance procedures being developed by the clinical/grading sub-group.

In all cases the result from the slit lamp examination will be placed into the national retinopathy screening programme software database in order that results can be sent to the patient, the patient's GP and the relevant diabetic care specialist.

3.3.4 Impact on Ophthalmology

The net effect on ophthalmology services of the introduction of a national diabetic retinopathy screening programme is likely to be modest, but the impact should be monitored by NHS Boards. Waiting times for referrals to ophthalmology from screening should also be audited. Ophthalmology services will require appropriate digital photography equipment as well as access to the Diabetes Clinical Management System and NHS Network. Boards must provide adequate protected clinical time to allow ophthalmologists to act as level 3 graders and quality assurors. The NHSQIS Diabetic Retinopathy Screening Clinical Standards state that the sets of images from a minimum of 500 randomly selected patients, or all images graded if less than 500 patients per grader per annum not otherwise referred to a third level grader are reviewed by a third level grader. In order to perform level 3 grading, the national guidance is that the individual must be a medical ophthalmologist with at least 1 years experience in medical retina and, experience in laser surgery. The availability of this resource is limited throughout Scotland.

3.4 Call/Recall

3.4.1 Call/Recall Centres

The role of the call/recall centre in managing the screening programme in close collaboration with local GP practices, hospitals and optometrists (where appropriate) is critical to ensure that all patients are invited, that images are collected from mobile and static sites in the community and are channelled as required through the various levels of grading, and that patients are invited to slit lamp appointments for technical failures where necessary. This model proposes that to avoid potential duplication of effort – or cross- boundary patients being missed– a single call/recall database for Scotland should be maintained – secure and suitably controlled for confidentiality – accessed locally for their own patients by the call/recall centres.

Call/Recall within the DRS Programme will be managed in one of the following three scenarios, depending on the decision of the NHS Boards, Regional Planning Groups and the Diabetes Managed Clinical Networks (Please note that when considering which scenario should be used in a particular area consideration should also be given to cost implication for software support, training and workforce planning (Annex D, Indicative Costing Scenarios).

3.4.1.1 Scenario 1- Regional Call/Recall

Call/Recall will be managed from a regional centre (this could potentially be in the same building as one of the regional centres) on behalf of two or more NHS Boards. The Regional Screening Manager will be responsible to the NHS Boards for organising and coordinating the day-to-day screening service for all NHS Boards served by the regional centre. Please see Section 2 Roles and Responsibilities for more information.

3.4.1.2 Scenario 2 – Regional Call/Recall with Some Local Delegation of Responsibility

Call/Recall will be managed from a regional centre as with scenario 1; however an agreed amount of responsibility is allocated to some local body, for example the diabetes clinic or a NHS Board. The Regional centre would still be solely responsible for the call and recall of all of the diabetes patients, but would allow booking of specific screening appointments by the designated bodies. (This will be done by either request to the Regional Centre or directly by the designated bodies who must be users of the DRSP Software). In this scenario it will be possible to link with diabetes annual reviews.

3.4.1.3 Scenario 3 – Local Call/Recall

Call/Recall will be managed by an individual NHS Board. This NHS Board will then be solely responsible for the monitoring and daily running of call and recall for its own diabetes population. In this scenario it will be possible to link with diabetes annual reviews.

3.4.2 Call/Recall Centre Administration

With scenarios one, two and three above, the call/recall centres, whether local or regional, will provide the following administrative support for screening. With scenario two, the regional call/recall centre will be responsible for ensuring that all patients are called for screening and referred where necessary and for providing the administrative support for screening as listed below, however some of the tasks may be delegated out to the local centre:

- call/recall and safeguarding procedures (ensuring that all patients are called for screening and referred where necessary);
- planning the continuous geographical programme of screening – sweeping on a rotational basis across the region to maximise coverage; in the first instance the patient will be called by GP practice followed by ongoing appointments determined by the date of last screen.
- managing the fixed site equipment and the mobile fleet of cameras for the region (maintenance, replacement, equipment testing and quality assurance, where each will be when, and from where staff will be drawn to screen at each location);
- collating lists of people to be invited for screening using the national call/recall software to draw information on eligible patients (practice by practice) from the SCI-DC database of the relevant Health Boards, in collaboration with local GP practice staff to ensure accuracy;
- collating clinic lists for retinal photography for both mobile and fixed site cameras, in collaboration with local hospital and primary care staff – including optometrist practices, where appropriate;
- allocating / changing appointments for individuals for photography either at a mobile camera or fixed site;
- sending invitations, reminders and results;
- monitoring uptake;

- following up to ensure results received for every patient that attended;
- action referral of patients who require further investigation or treatment to appropriate ophthalmology service pertaining to the patient's health board;
- action referral of patients to slit lamp for technical failures
- ensuring GP is informed at all required stages through SCI Gateway that local diabetologists have access to necessary information through SCI-DC Network;
- producing performance statistics for quality assurance or audit purposes, for use within the DRS collaborative network; and
- reports of performance against NHS QIS standards for NHS Boards to use in managing performance of the programme.
- issue report to GP/diabetologist

Diabetic retinopathy screening is an integral part of diabetes care and one of the roles of the users of the national DRS software in call/recall will be to ensure that the database used for screening call/recall is checked against local clinical management system before invitations are issued. Quality points are awarded in the new GMS contract which includes the percentage of patients who have a record of retinal screening as one of its quality markers. The demographic data to populate the DRS system will be supplied by SCI-DC. The results of the screening process must be fed back into SCI-DC. The national DRS software will be compatible with SCI-DC and will provide two way links with SCI DC. Where the IT infrastructure can support it, compressed images of retinal photographs for educational purposes only will be available to the relevant diabetes healthcare professionals using SCI-DC.

3.4.3 Call / Recall Service

The call/recall aspect of the national DRS software will issue patients either a prompt or an appointment that they have the option to change if it is not suitable. Patients will also be able to self refer and will be given an immediate appointment if available.

In order to maximise uptake, the national DRS software can either issue invitations by prompt or fixed appointment, and this is configurable by screening location. It will therefore be possible to issue both prompts and fixed appointments within a Regional or NHS Board call/recall office

3.4.4 Screening Process – Links with Diabetes Clinics

There are a number of established diabetes units in most areas of Scotland. In many areas plans will be in place to site some of the retinopathy screening cameras in diabetes centres. This enables opportunistic screening for some individuals who rarely attend diabetes services and allows those patients who wish to have their eyes screened at the same time as their diabetes review visit to do so.

To conform to the NHS QIS standards patients images must be graded by the quality assured grading scheme. As a consequence a quality assured grading result from screening will not be available for patients who attend screening on the same day as their diabetes review visit for discussion with their clinician. Alternatively the patient's appointment can be made in advance of the diabetes review visit. Patient results will be sent to the diabetologist and will also be made available through SCI-DC to enable an informed discussion during the patients diabetes review. For further information on linking the DRS programme and the Diabetes clinics please see Sections 3.4.1.2 Scenario 2 – Regional Call/Recall with Some Local Delegation of Responsibility and 3.4.1.3 Scenario 3 – Local Call/Recall

3.4.5 Participation in the Screening Programme

No patient will be permanently excluded from the screening programme unless clinically warranted. Some individuals may, for clinical or other reasons, be too unwell to participate in systematic screening, or should not be called (This issue will be rare but may include patients with dementia, those who are terminally ill or those who are bed-bound, have total loss of sight, etc). Patients who are unfit for screening will need to be referred to ophthalmology or excluded from the programme at the discretion of the general practitioner. It is proposed that lists of patients who are eligible to be invited for screening will be sent to their GPs. GPs will then have the opportunity to review the list to identify and indicate the patients who should not be recalled for screening at that time or highlight any change (e.g. to the patient's address). Those patients who have been taken from the list as 'unable to participate in screening' will need to be catered for locally at the GPs discretion. It is important to note that although GP's will have the opportunity to view the list of patients due to be screened, the default is that the patient will be invited for screening, and this does not rely on authorisation from the GP.

3.5 Locally Delivered Screening Services

The screening (photographic) service for the patient will be delivered as locally as possible to the patient. (Please see section 3.5.2 Photographic Service for more detail). The assessment and treatment of patients who are referred to ophthalmology will also be locally delivered.

The planning of appointments for the patients will be arranged in a call / recall centre (Please see section 3.4.1 Call/Recall Centres for more detail), however the local NHS Board Co-ordinator and the local diabetes Managed Clinical Network will give guidance and assist in the planning of the delivery of the screening service.
For patients with an appointment for a mobile screening unit who have been unable to attend, depending on notice, a new appointment will be offered at a local mobile unit at the nearest location or failing this at a fixed site.

3.5.1 Strategic Planning Group

To facilitate this process and to preserve links between regional screening services and the local diabetes services that patients will access, each regional diabetic retinopathy call / recall centre will have a strategic planning group with representation from all key stakeholders, such as the Regional Screening manager, diabetes managed clinical network, the ophthalmology service of each NHS Board it covers, general practice and the area optometric committee. In addition each diabetes managed clinical network will also provide a patient representative.

3.5.2 Photographic Service

The screening (photographic) service will be delivered locally so that the patient journey is minimised. This local delivery might be achieved by using cameras at a fixed site such as:

- a hospital;
- at a high street optometrist

or at multiple locations for a variable length of time. Cameras will be transported to these sites and photography will occur either within the van used to transport the equipment or more commonly in a suitable room such as at:

- a GP's surgery
- a local community hall
- a nursing home
- a pharmacy

The Diabetes MCN should advise the NHS Board on the preferred options for pattern of service.

Please see Annex C Patient Flow Diagram for more detail of the local screening process.

4. Workforce Considerations

4.1 National Occupational Standards have been developed for retinal screeners that are based on skills and competencies rather than a particular profession. (Please see Section 9 Further Information) All retinal screeners will probably need to be "part-time" to maintain job satisfaction. For example: retinal screeners performing both grading and photography, or photography and administration. Depending on their profession other "part-time" roles could be envisaged.

4.2 The exact number of Whole Time Equivalents (WTEs) required of each grade of staff will depend on the population covered and the geography of the area covered – urban or rural. For example: in Grampian this service with an approximate diabetes population of 16,000 has the following staff profile:

- 1 WTE screening co-ordinator
- 2 WTE administration assistants
- 4 WTE photographers
- 1.2 WTE grader
- 0.1 WTE level 3 grader
- 0.1 WTE quality assurer
- 0.2 WTE slit lamp examiner

4.3 Depending upon the design of the screening programme the photographers may be local hospital or primary care staff allocated part time to the screening programme for certain periods within the year to staff mobile vans or fixed site hospital clinics. Secondment contracts could be used in these circumstances (Ref PIN Guidelines)

4.4 For quality assurance purposes, graders using slit-lamp examination for technical failures (0.1-0.2 WTE grader) may need to be involved in grading of digital images (0.1-0.2 WTE grader).

4.5 NHS Boards should consider the availability of key staff in their area and also consider the sustainability of locally organised services supported by few staff

5. Training and Proficiency Testing

Regional Centres will provide a focus for training and professional networking across the region. However this model proposes that, to ensure national standardisation and consistency, training and proficiency testing should be administered nationally by NSD rather than regionally, but delivered locally in each Regional Centre. (Reference: NHS QIS DRS Standard 4 - proficiency testing). A DRS Training Handbook has been published by SEHD and a national Training committee has been set up as part of the DRS Collaborative network to oversee the national training. Proficiency testing will be compulsory for all graders and will be part of the national DRS Software.

6. Promotion of Screening

In keeping with the role of NHS Boards to obtain care to meet the needs of their population; it is for NHS Boards to promote the uptake of screening among their residents. The regional model outlined in this paper assumes that NHS Boards will make their own arrangements to promote diabetic retinopathy screening through their Diabetes Managed Clinical Networks. To support this, a single national patient information leaflet template is being developed by NSD in conjunction with the Service Management sub-group of the DRS Collaborative and the Patient Focus Implementation Sub-Group of the Scottish Diabetes Group. These leaflets will draw together all relevant guidance for the patient and will be produced centrally for distribution to the NHS Boards. An electronic copy of both the standard leaflet, and a version for the visually impaired, will be included on the Scottish Diabetes Group website www.diabetesinscotland.org and the NSD website www.show.scot.nhs.uk/nsd/services/drs. The production of patient information in minority languages will be a responsibility of each NHS Board.

7. IT Network Infrastructure

The final design for the delivery of the DRS Service throughout Scotland will be dependent on the IT Network Infrastructure which is currently in place, or is planned for implementation before rollout of the national DRS Programme Software.

Image Capture and Grading rely on a large amount of bandwidth or a secure and failsafe workaround for transfer of images between the capture stations and the grading stations. NHS Boards and Regional Planning Groups need to take this into consideration when planning their service and will also need to involve their IT divisions when planning the outline of their service.

In some cases the photography service site, the grading service site and the call/ recall site may all be connected via the NHSnet. In other cases, this may not be possible. For example, in a rural community it may not be possible to communicate through the existing IT network infrastructure with a screening service in a van. Vans might be away from their base for several weeks at a time. In such situations, non web-based means of communications may be needed, e.g. communication by telephone, fax, CDROM or other removable media.

The national DRS Software supposes that all NHS Boards are also connected to and have populated SCI-DC with their diabetes register before the rollout of the software.

8. Conclusion

In summary this outline vision is of a single integrated national diabetic retinopathy screening programme for Scotland, administered from an agreed number of call /recall centres (which either will be regional or local depending on the NHS Board requirements in each area) and facilitated by an agreed number of regional centres on behalf of all NHS Boards

9. Further Information

Further information on DRS and the DRS Programme can be found on the following websites:

The NSD DRS Programme Website: www.show.scot.nhs.uk/nsd/services/drs

The Diabetes Website: http://www.diabetesinscotland.org/diabetes/Index.asp

The Skills for Health Website (NOS Standards): www.skillsforhealth.org.uk

Annex A Critical Success Factors

1. Service delivery led

- National approach
- QIS Standards
- Patient focused

2. Effective

- Take up rate
- Recall

3. Efficient

- Optimum use of resources
- Use of technology (SCI-DC, National DRS Software)

4. Viable

- Removing dependency on a small number of critical staff
- Facilitating training, quality assurance and team work.

5. Quality

- Auditable (internal, external)
- Delivery of results within target
- National reporting

6. Failsafe

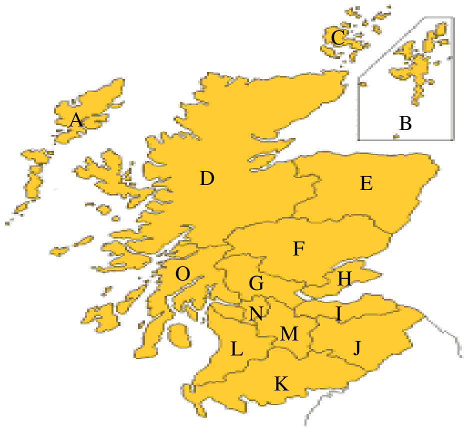
- 'No one will be missed'
- Business continuity
- Consistent
- Across NHSScotland

7. Control

- DRS Coordinator
- Technology enabled
- No inputting of patient information

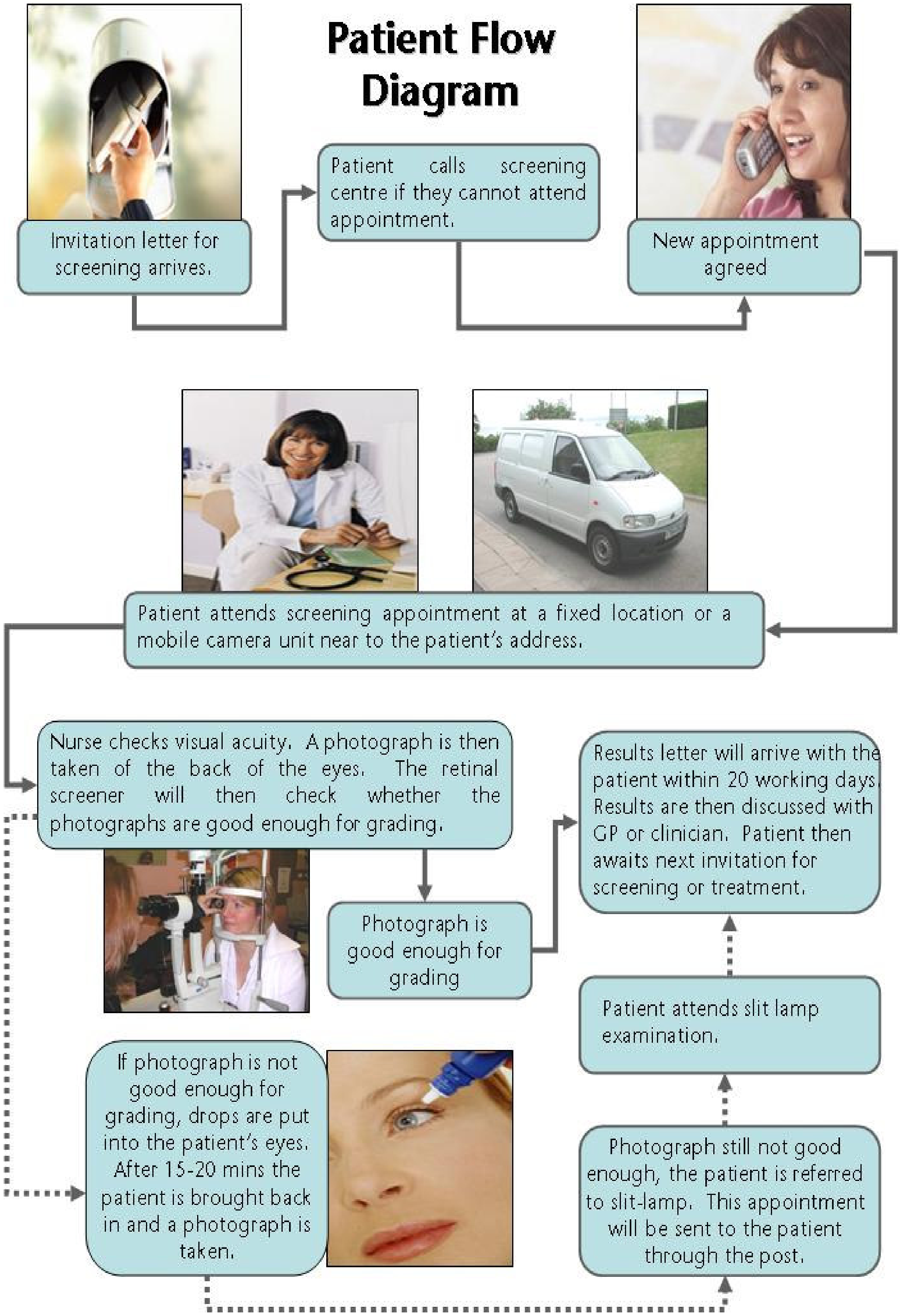
Annex B Current planned DRS Service - Map of Scotland

(Please note that the numbers listed below are the expected prevalence of diabetes in Scotland from the Scottish Diabetes Survey 2003. 2004 population numbers will be published shortly)



Regional Centre	Reference on Map	NHS Board Areas	Approx Population
Aberdeen	E	Grampian	16,704
	D	Highland	6,920
	C	Orkney	663
	B	Shetland	666
Total Population for North of Scotland Regional Centre (based in Aberdeen)			*24953*
Edinburgh	I	Lothian	23,381
	J	Borders	3,862
Total Population for Lothian and Borders Regional Centre (based in Edinburgh)			*27243*
Glasgow	N	Greater Glasgow	27,283
Total Population for Greater Glasgow Regional Centre (based in Glasgow)			*27,283*
Hairmyres	M	Lanarkshire	16,828
	K	Dumfries & Galloway	5,310
	O	Argyll & Clyde	13,587
Total Population for LAD Regional Centre (based in Hairmyres)			*35,725*
Dundee	F	Tayside	13,173
	A	Western Isles	977
Total Population for Tayside Regional Centre (Based in Dundee)			*14,150*
All other Grading centres not within a Regional Centre			
	L	Ayrshire & Arran	12,392
	H	Fife	11,260
	G	Forth Valley	8,734

Annex C Patient Flow Diagram



Annex D Indicative Costing Scenarios

Indicative Costing Scenarios April 2004

Indicative Costing Scenarios April 2004		Scenario One	Scenario Two	Scenario Three
		5 Regional Grading Centres, 5 Regional Call/ Recall Centres using the same accommodation with a maximum of 22 regional administration staff, 40 capture stations and 30 graders for Scotland	*5 Regional Grading Centres, 5 Regional Call Recall centres using the same accommodation. With additional delegated access to more local administrators e.g. clinics and NHS boards, with a maximum of 22 regional administration staff, 40 capture stations and 30 graders plus additional local administration*	*5 Regional Grading Centres, up to 15 local Call Recall and admin centres using the different accommodation plus the additional use of optometrists for photography. With a maximum of 40 regional capture stations and 30 graders plus local administration and additional use of optometrists for photography only.*
RegionalGrading/ Call-recall centres Set-up				
Accommodation	NHS Boards	5 buildings	as S1	increase on S1
PC hardware	NHS Boards	PC Hardware for all admin, grading and screening staff	as S1	increase on S1
Fixed/mobile cameras	NHS Boards	40 image capture stations	as S1	increase on S1
Transport/screening vehicles	NHS Boards	As required	as S1	as S1
Recruitment	NHS Boards	Per staff contingent	as S1	as S1
Training : Grading	NSD	Grading training for 30 staff	Grading training for 30 staff	Grading training for 30 staff
Training : Administration	NHS Boards	Admin training for 22 staff	Admin training for 22 staff	nil
Training : Image capture/screening	NHS Boards	Screening training for 40 staff	Screening training for 40 staff	increase on S1
Annual revenue				
Graders L1	NHS Boards	30 for Scotland (all graders)	30 for Scotland (all graders)	30 for Scotland (all graders)
Graders L2	NHS Boards			
Graders L3	NHS Boards			
Screening Coordinators (Regional)	NHS Boards	5 screening coordinators	as S1	nil
Administration (Regional)	NHS Boards	22 administration staff	as S1	nil
Screeners	NHS Boards	40 screeners	as S1	increase on S1
Quality Assurers	NHS Boards	5 (1 per region)	as S1	as S1
Training : Grading	NHS Boards	as needed for additional staff	as S1	as S1
Training : Administration	NHS Boards	as needed for additional staff	as S1	nil

Indicative Costing Scenarios - April 2004

Continued

		Scenario One	Scenario Two	Scenario Three
		5 Regional Grading Centres, 5 Regional Call/ Recall Centres using the same accommodation with a maximum of 22 regional administration staff, 40 capture stations and 30 graders for Scotland	*5 Regional Grading Centres, 5 Regional Call Recall centres using the same accommodation. With additional delegated access to more local administrators e.g. clinics and NHS boards, with a maximum of 22 regional administration staff, 40 capture stations and 30 graders plus additional local administration*	*5 Regional Grading Centres, up to 15 local Call Recall and admin centres using the different accommodation plus the additional use of optometrists for photography. With a maximum of 40 regional capture stations and 30 graders plus local administration and additional use of optometrists for photography only.*
Training : Image capture/screening	NHS Boards	as needed for additional staff	as S1	increase on S1
Capital Charges	NHS Boards	for all screening equipment	as S1	increase on S1
Equipment maintenance	NHS Boards	for all screening equipment	as S1	increase on S1
Vehicle maintenance	NHS Boards	for all screening equipment	as S1	as S1
Local Delegated administration/ local call recall				
Set-up				
Accommodation	NHS Boards	nil	Increase as per Board requirement	Increase as per Board requirement
PC hardware	NHS Boards	nil	Increase as per Board requirement	Increase as per Board requirement
Recruitment	NHS Boards	nil	Increase as per Board requirement	Increase as per Board requirement
Training : Administration	NHS Boards	nil	Increase as per Board requirement	Increase as per Board requirement
Annual revenue				
Screening Coordinators (Local)	NHS Boards	nil	Increase as per Board requirement	Increase as per Board requirement
Administration (Local)	NHS Boards	nil	Increase as per Board requirement	Increase as per Board requirement
Running Costs	NHS Boards	nil	Increase as per Board requirement	Increase as per Board requirement
Training : Administration	NHS Boards	nil	Increase as per Board requirement	Increase as per Board requirement
Use of Optometrists for photography only		nil	nil	Increase as per Board requirement
IT				
Set-up				
PMAR system	NSD	1 system for Scotland	1 system for Scotland	1 system for Scotland
ICAG system	NSD	1 system for Scotland	1 system for Scotland	1 system for Scotland
IT Network Infrastructure	SEHD/NHS Boards	Upgrades may be needed	as S1	Increase on S1 due to Optometry use
SCI-DC	NHS Boards	Purchase and implement	as S1	as S1

Indicative Costing Scenarios - April 2004

Continued

		Scenario One	Scenario Two	Scenario Three
		5 Regional Grading Centres, 5 Regional Call/ Recall Centres using the same accommodation with a maximum of 22 regional administration staff, 40 capture stations and 30 graders for Scotland	*5 Regional Grading Centres, 5 Regional Call Recall centres using the same accommodation. With additional delegated access to more local administrators e.g. clinics and NHS boards, with a maximum of 22 regional administration staff, 40 capture stations and 30 graders plus additional local administration*	*5 Regional Grading Centres, up to 15 local Call Recall and admin centres using the different accommodation plus the additional use of optometrists for photography. With a maximum of 40 regional capture stations and 30 graders plus local administration and additional use of optometrists for photography only.*
Hosting - database	SEHD/NHS Boards	National hosting needed	as S1	as S1
Hosting - image storage	SEHD/NHS Boards	National storage needed	as S1	as S1
Training	NSD	for all ICAG/PMAR system users, limited by budget	increase on S1 due to more users	Increase on S2 due to more users
Support/helpdesk etc	NSD	relates to number of system users	increase on S1 due to more users	Increase on S2 due to more users
Licences	NSD	for all ICAG/PMAR system users, limited by budget	increase on S1 due to more users	Increase on S2 due to more users
Annual Revenue				
Hosting	NHS Boards	National hosting needed	as S1	as S1
Maintenance	NHS Boards	relates to number of system users	increase on S1 due to more users	Increase on S2 due to more users
Capital Charges	SEHD	For PMAR/ICAG system	as S1	as S1
Training	NHS Boards	As needed for additional staff	increase on S1 due to more users	Increase on S2 due to more users
Support/helpdesk etc	NHS Boards	relates to number of system users	increase on S1 due to more users	Increase on S2 due to more users
PMAR Licences	NHS Boards	relates to number of system users	increase on S1 due to more users	Increase on S2 due to more users
ICAG Licences	NHS Boards	relates to number of system users	increase on S1 due to more users	Increase on S2 due to more users

Please note that staff numbers are per job required not necessarily per whole time equivalent.

Annex E NICE Guidance on the use of PDT for age related macular degeneration

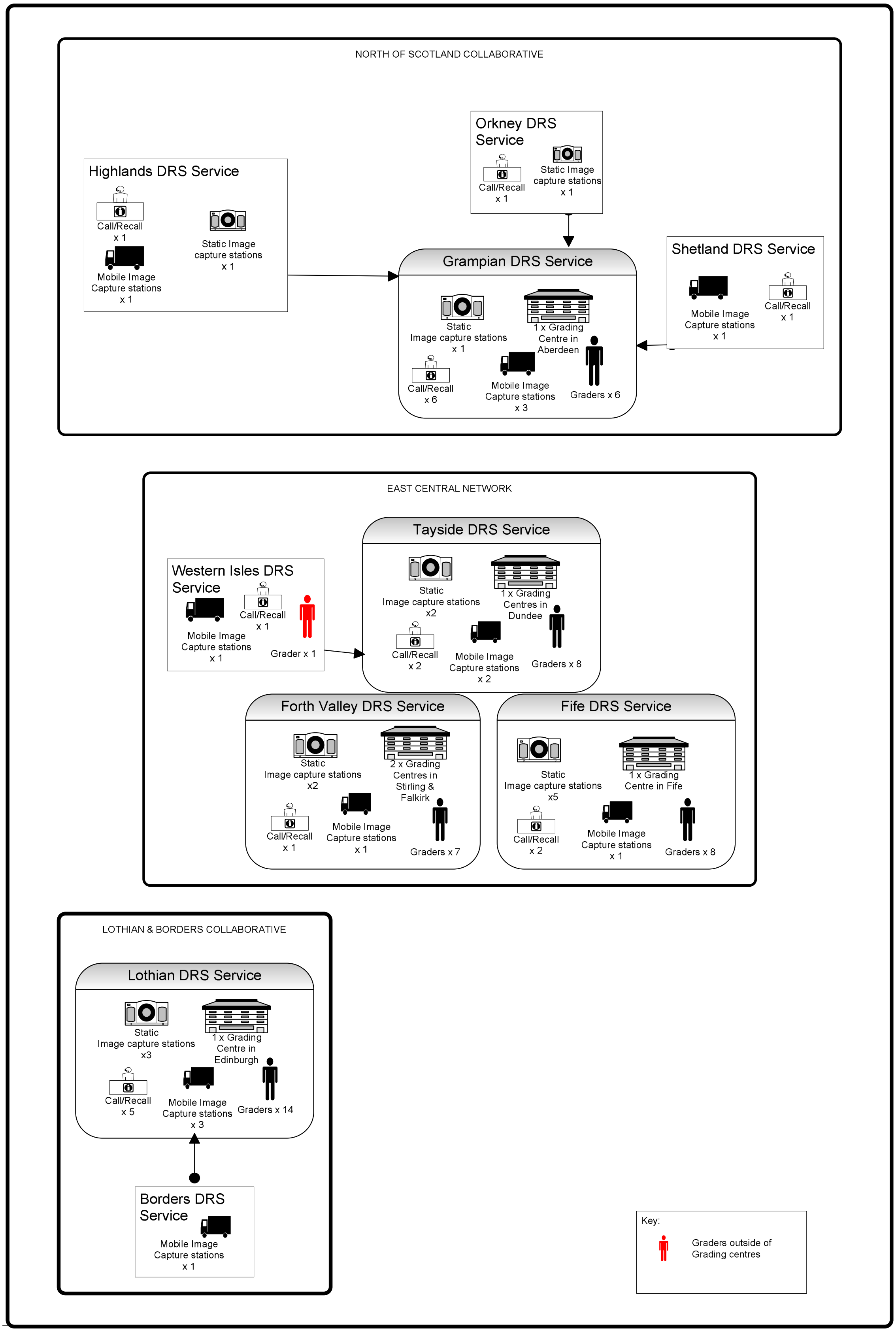
- Photodynamic therapy (PDT) is recommended for the treatment of wet age-related macular degeneration for individuals who have a confirmed diagnosis of classic with no occult subfoveal choroidal neovascularisation (CNV), and best-corrected visual acuity of 6/60 or better. Only retinal specialists should carry out PDT with expertise in the use of this technology.

- PDT is not recommended for the treatment of people with predominantly classic subfoveal CNV (that is, 50% or more of the entire area of the lesion is classic CNV but some occult CNV is present) associated with wet age-related macular degeneration, except as part of ongoing or new clinical studies that are designed to generate robust and relevant outcome data, including data on optimum treatment regimens, long-term outcomes, quality of life and costs.

- The use of PDT in occult CNV associated with wet age-related macular degeneration was not considered because the photosensitising agent (verteporfin) was not licensed for this indication when this appraisal began. No recommendation is made with regard to the use of this technology in people with this form of the condition.

- Patients currently receiving treatment with PDT could experience loss of well-being if their treatment is discontinued at a time they did not anticipate. Because of this, all NHS patients who have begun a course of treatment with PDT at the date of publication of this guidance should have the option of continuing to receive treatment until their clinical condition indicates that it is appropriate to stop.

Annex F Current NHS Board Planning
North & South East of Scotland (March 2005)



Annex G Current NHS Board Planning West of Scotland (March 2005)