

Project Delivery Directorate People Plant Interface and Close Proximity Working Booklet



The PDD people plant interface segregation process, training and guidance has been produced by a collaboration between Sellafield and its Main Contractors.



Collaboration together we are Stronger



Content Page

Introduction	4
Segregation Hierarchy Process Map	5
Guidance Note 1 Fixed or Permanent Segregation Zone	6
Guidance Note 2 Managed Mobile Segregation Zone	9
Guidance Note 3 Close Proximity Working Zone	11
Project Delivery Directorate Standard Signage	14
Guidance Note 4 Safe Working Arrangement's Example.	15

Introduction

People plant interaction continues to kill our colleagues across the construction industry an average of 7 deaths a year and 93 major injuries. Sellafield is no different, we have had 9 significant near misses with regard to people plant interaction in recent times.

Here at Sellafield we have many plants and construction sites that require heavy plant/machinery with occasional human interaction. Although HSE guidance tells what we must achieve to work within the law, the very nature of construction sites and an embedded culture of accepted risk with regard to people plant interface sometimes makes this difficult to achieve. We aim to make things easier for you.

The Project Delivery Directorate (PDD) has been working with its main contractors over the last year to develop a new PPD standard for segregation and close proximity working.

The PPD People Plant Interface and Close Proximity Working Standards Document which is detailed in this booklet, focuses on a new hierarchy for segregation for companies working within the PPD, and those planning and organising work must follow the hierarchy

The hierarchy for segregation is a collaborative new concept developed on Sellafield which focuses on HSE guidance and legislation but most importantly keeping people segregated from plant and ensuring that when we do have to interact with plant it's done so in a disciplined approach in accordance with our nuclear safety values and beliefs. We are nuclear professionals in everything we do.

What's different? How are we changing ?

- Our focus is on segregation, nothing new you might say?
- But ask yourself how many times do you see people stood next to plant?
- How many times do we see people talking to a plant operator?
- How many times do you see segregation controls stipulated in risk assessments and method statements?
- How often do you see those segregation controls applied? How many times do you see plant and machinery fully segregated from operatives?
- Would it be fair to say to say we have a culture that is perhaps desensitised to the dangers of plant operations?
- We must improve in these areas which are required by law to be suitable and sufficient.

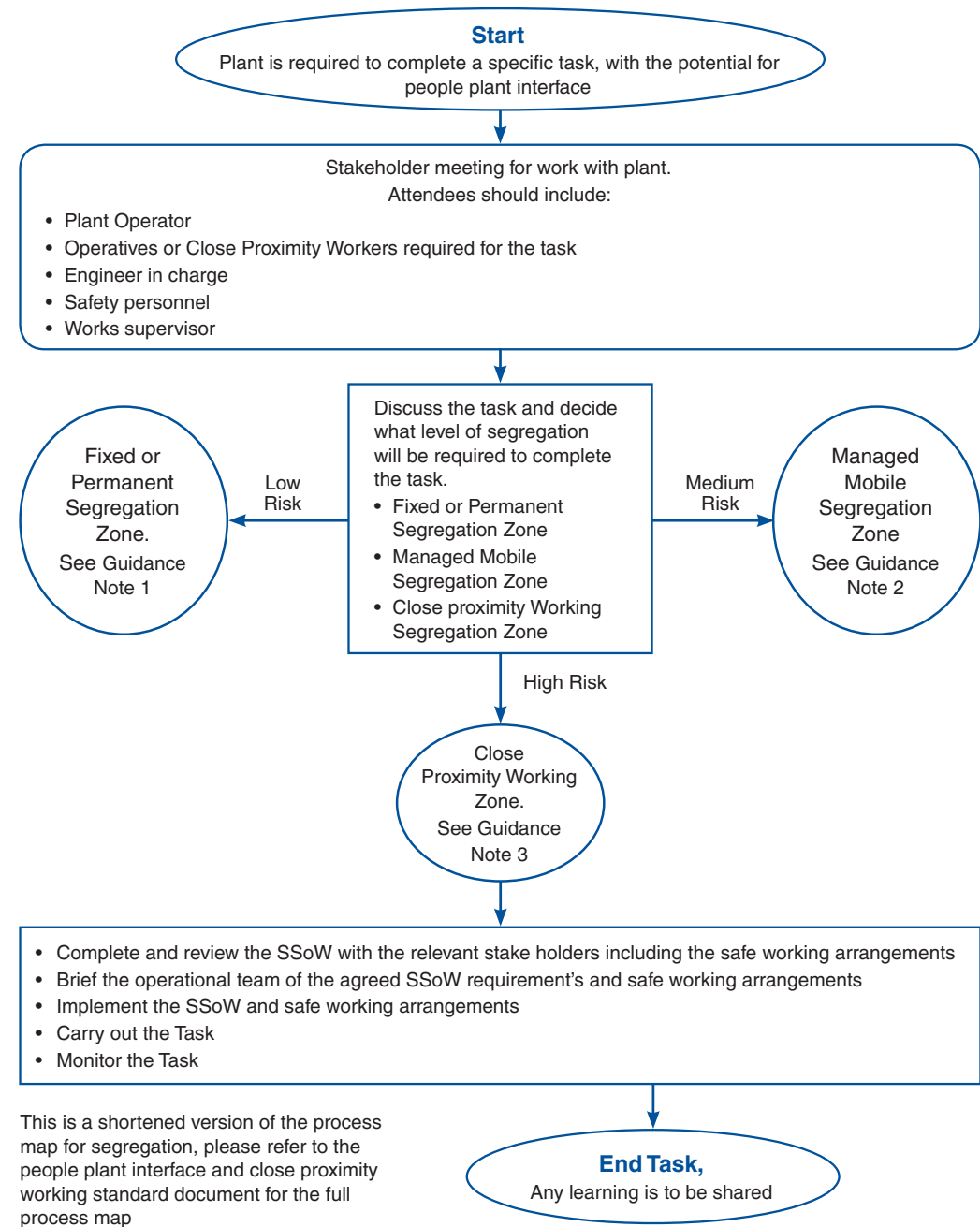
In the Project Delivery Directorate we have collectively collaborated with our main contractor's on site to challenge the culture surrounding segregation and come up with a new way of thinking.

We came up with a simple concept, if people are segregated from plant then they cannot be hurt by the plant or machinery.

Only when we have no option should we place our friends and colleagues in the vicinity of plant and machines, but we must then apply strict rules to keep them safe at all times.

The concept we have adopted is simple, based on risk and follows the segregation hierarchy detailed within this booklet.

Project Delivery Directorate People Process Map for Hierarchical Control



Segregation Hierarchy

Guidance Note 1 Fixed or Permanent Segregation Zone

Low Risk



Physical barriers around the working zone of the plant/vehicle preventing access for any personnel. No access required by operatives to complete the task.

We must always first try to ELIMINATE the risk of harm ask yourself the following questions and ACT on the answer .

- Do you need to use this piece of plant?
- Has the project explored alternative design methods?
- Have you established traffic routes on site?
- Have you established pedestrian routes on site?
- Do you have the correct equipment on site to achieve segregation?
- Are you having the plant delivered to a safe designated place?
- Is the delivery planned?

This is our first hierarchical control. Full segregation - we eliminate the risk of people and plant collision by an appropriate physical barrier.

A fixed or permanent segregation zone must be recorded in a written Safe System of Work.

We must always plan out work and sites to achieve segregation from vehicles/plant and pedestrians. Pedestrians include members of our workforce either Directors, Operatives, Supervision or Management, this also includes members of the public and site visitors.

Guidance Note 1 Fixed or Permanent Segregation Zone

Examples where fixed or permanent segregation should be used (this is not an exhaustive list)

- Loading of wagons with spoil
- Landscaping of earth mounds, banks or bunds
- Stripping of green field site
- Stripping of brown field site after site investigations and where a risk assessment permits the use of plant
- Trench excavation where site information indicates no presence of underground apparatus
- Trimming of road formation with the use of GPS
- Lifting operations once a load has been slung
- Loading a crusher with an excavator or loading shovel
- Any area where human interaction is not required

Equipment for achieving fixed or permanent segregation:-

J - Safe Guardrail System*

Armco Barriers

Rhino Barriers

Scaffold

Herras Fencing*

Standard Major Project Signage to be displayed

***Some of these systems may require a temporary works design.**

NOTE; Any unauthorised personnel found to be in a permanent or fixed segregation zone will be subject to disciplinary proceedings.

Guidance Note 1 Fixed or Permanent Segregation Zone



Plant segregated from walkways and pedestrians. Task does not require interaction from operatives



Rhino barriers demarking a pedestrian walkway



This shows the working radius of the excavator.

Segregation Hierarchy

Guidance Note 2 Managed Mobile Segregation Zone Medium Risk



Temporary, easy to move around the working zone of the plant/vehicle. Zone managed by a Pedestrian Marshall from outside the segregated area. No access required by operatives to complete the task.

If you can not achieve a fixed or permanent segregation zone the next hierarchical control is for a managed mobile segregation zone.

A managed mobile segregation zone must be recorded in a written safe system of work.

The managed mobile segregation zone is to allow plant to operate where a fixed or permanent segregation zone is not achievable due to site constraints such as tight working areas, access requirements through plant working areas, plant required to work next to a designated walkway, or where a piece of plant is continually required to move, for example along the dimensions of a trench during excavation activities where permanent or fixed segregation cannot be achieved.

A managed mobile segregation zone, must be managed. It must be managed by a Pedestrian Marshall.

The role of the Pedestrian Marshal is very specific:-

- The Pedestrian Marshall is to ensure other pedestrians do not enter the demarked managed segregation zone
- The Pedestrian Marshall is not permitted to work as a traffic/vehicle marshal or slinger/signaller whilst working as Pedestrian Marshall.
- The Pedestrian Marshall can move the managed mobile segregation zone only when all plant in the zone is isolated and with the assistance of the plant operators.
- The Pedestrian Marshall can open a managed mobile segregation zone to allow people/traffic through the working area only when all plant in the working area has been isolated and it is safe to do so.
- The Pedestrian Marshall can only close a managed mobile segregation zone once all persons have left the working zone he can then signal the plant operators to run their plant.

Guidance Note 2 Managed Mobile Segregation Zone

A managed mobile segregation zone should not be used as a default hierarchical control and must only be implemented when fixed or permanent segregation cannot be achieved and clearly recorded in a written safe system of work for the specific tasks carried out.

Equipment for managed mobile segregation zones:-

Road cones spanned with Attachable Retractable Barrier Tape

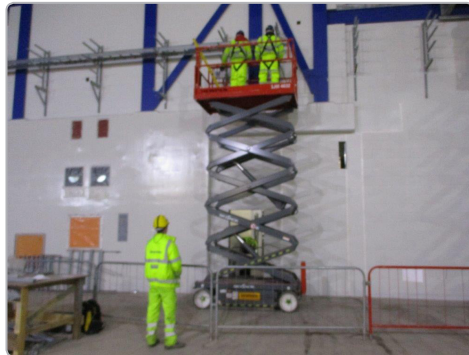
Road cones spanned with red and white piping

Standard Major Projects Signage to be displayed

These options are easy to purchase and allow the segregation zone to become easily mobile, flexible and controlled.



A managed mobile segregation zone. The Pedestrian Marshall prevents people from entering.



Pedestrian Barriers can also be used to set up a managed mobile segregation zone.

NOTE: Any unauthorised personnel found to be in a mobile managed segregation zone will be subject to disciplinary proceedings.

Segregation Hierarchy Guidance Note 3 Close Proximity Working Zone High Risk



Operatives are required to enter the plant/ vehicle zone to complete a task e.g. pouring concrete from skip, installing or removing trench boxes, working in manhole.

The 5 rules for close proximity working are :-

1. The task requires interaction from an operative.
2. Close proximity workers must be trained.
3. A written safe system of work must be in place.
4. Segregation must be in place.
5. Only close proximity workers are allowed in a segregated area.

Guidance Note 3 Close Proximity Working Zone

Supporting information for the 5 CPW rules

1. The stakeholders have assessed the task using the segregation hierarchy and have identified that the task requires interaction from an operative which cannot be completed from outside a permanent or fixed segregation zone or a managed segregation zone.
2. Close proximity workers must attend and pass the PDD People Plant Interface training course and any other training course specific to the role they are required to carry out e.g. Slinger/Signaller.
3. The written safe system's of work and sequencing for a CPW task must be agreed by the relevant stakeholders and briefed and understood by the CPW team for each specific task. A written Safe System of Work for close proximity work as a minimum includes; Risk Assessment, Method Statement, Formal Pre-Job Brief.
4. Permanent, fixed or managed mobile segregation must be in place to keep unauthorised pedestrians away from Close Proximity Working zone for each specific task. Refer to guidance note 1 or 2 for segregation equipment.
5. Directors, Managers, Supervisors, Foremen, Engineers, Operatives, Visitors are all prohibited from entering the CPW zone during a live working activity.

Some examples of close proximity working;

- Laying drainage
- Waste removal where waste is stored in containers or dumpy bags
- Concrete delivery and installation
- Kerb laying
- Installation of man holes
- Fence hanging/removal
- Loading and unloading of delivery vehicles
- Fuelling of plant machinery
- Materials/Consumables Satellite site delivery

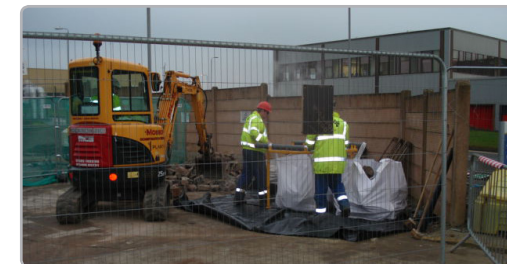
Close proximity working still requires the work area to be segregated to prevent any unauthorised persons entering the close proximity working zone.

This can be achieved using fixed, permanent or a managed mobile segregation zone. The signage for this activity must also be the standard major projects signage for close proximity working and must be displayed at all potential points of entry.

Guidance Note 3 Close Proximity Working Zone



An operative is required to take a level from an excavation whilst the plant is in operation he remains outside the segregation zone. Only after the thumbs up and machine is isolated does he enter the segregation zone to take a level. These pictures demonstrate a controlled, methodical and sequenced approach to close proximity working, within a managed mobile segregation zone.

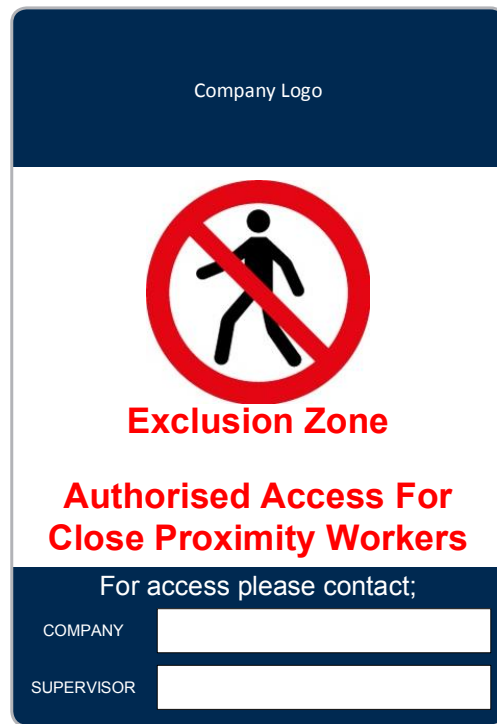


Excavation can generate spoil on occasion, in this instance spoil is required to be placed in dumpy bags for removal and storage. This requires the use of a metal frame to keep operatives away from the loading operation. These pictures show the operatives acting as spotters from outside the segregation zone and only entering the segregation zone to change the bags once the thumbs up has been received and the plant is isolated.

Project Delivery Directorate Standard Signage



For use on fixed permanent or managed segregation zones.



For use on close proximity working zones.

Guidance Note 4 Safe Working Arrangement's Example.

Waste Removal via Tele handler where waste is stored in dumpy bags.

This is the generic guidance for removing waste that is stored in 1t dumpy bags with the use of a tele handler.

- A SQEP Supervisor will ensure the Risk Assessment, POWA and safe working arrangements are briefed out to operatives involved in the activity
- The Supervisor will ensure the Tele handler driver holds a valid CPCS card for the plant to be used and will ensure the close proximity workers have attended and passed the PDD CPW training
- Only multi-lift 1t dumpy bags are to be used, this does not mean multi-use and that any dumpy bags shall only be used once then disposed of
- Information must be included with regards to the classification of waste and any potential hazards associated with the waste classification. Any handling requirements must also be written into the SSOW.
- Prior to the task being completed an assessment of all visible sides of the dumpy bag/bags to ensure there is no damage must take place, sides which are not visible will be inspected following the 'Test lift' See **Step 7** below. This is to ensure we are using the correct plant for waste removal.
- NB: if a bag is showing damage it will be split and the material loaded into a new dumpy bag with hand tools, if 2 or more bags are damaged a rubber duck with a grab-arm attachment will load materials into a wagon where and if required - This does not require Close Proximity Working.
- Number of operatives for waste removal - 2 plant operatives max. 2 CPW Operatives max. 1 pedestrian Marshall.

Guidance Note 4 Safe Working Arrangement's Example.

The following is a step by step guide to the safe loading of 1t Dumpy bags

Step 1 - A fixed/permanent segregation zone will encompass the entire work area fully excluding any third parties from entering the working area, this must include mandatory signage.

Step 2 - The waste transportation vehicle will enter the working area and park at a pre-agreed loading area in accordance with the Safe Systems of Work

Step 3 - The waste transportation vehicle will then isolate and the driver will remain seated in the vehicle during the loading operation

Step 4 - The Tele handler will enter the work area in accordance with the Safe Systems of Work operative and move local to the dumpy bag

Step 5 - When the CPW operative confirms no other personnel are within the work area they can direct the Tele handler to place the forks through the lifting points of the dumpy bag

The Tele handler forks will be apart no greater than the width of the dumpy bag (1000mm)

NB: this operation can have 1 no additional CPW operative when guiding the forks through lifting points making 2 CPW operatives Max.

Step 6 - Once the dumpy bag is secured through the forks all CPW operatives will leave the segregated area or retreat a minimum of 5 metres from the tele handler remaining in the line of sight of the plant operator.

Step 7 - The Tele handler will now perform a test lift once all CPW operatives are clear. Lift the dumpy bag 1-2m off the existing ground level as a 'Test lift' if the dumpy bag fails the lift test the dumpy bag must be placed on the ground and the tele-handler must retreat and isolate. Once Isolated the CPW operatives will remove the contents using hard tools and place into a new dumpy bag. Once completed revert back to **step 4**. If the waste is classed as hazardous/contaminated consultation with the LLC & health physics is mandatory as further controls may be required.

Step 8 - If at this point the load passed the 'Test lift' all CPW operatives will remain clear and the dumpy bag will be placed onto the waste transportation vehicle

Step 9 - When the load is in place the Tele handler will repeat steps 4-9 until the task is complete

Step 10 - When the task waste removal vehicle has been loaded all plant must be switched off and isolated to allow the load to be secured on the waste transportation vehicle.

Notes:
