

SGN Third Party Connections Briefing Note 4

(Guidance on standard pressure and gas usage tables from NP/14)

1 Introduction

NP/14 is the main SGN Network Planning specification document used by Third Party Connections. It sets out pressure parameters, pipe size minimums and restrictions for loads up to a certain threshold, which SGN set as an acceptable standard for use by third parties for design purposes.

In accordance with SGN's Licence Condition 4B statement, standard source pressure tables for 'guaranteed pressures' have been included within NP/14 to enable submissions to utilise the 'Fastrack' process, where applicable.

2 NP/14 Appendix A

2.1 NP/14 Table A.1 (*Medium pressure*)

Nominal Pipe Diameter	Maximum Demand (kW/scmh)	
	MP: DMP ≤ 65mb	MP: DMP > 65mb
≤ 2" / ≤ 50mm metallic	≤ 110 / 10	≤ 220 / 20
≤ 63mm / ≤ 2" PE		
> 2" - ≤ 4" metallic	≤ 275 / 25	≤ 433 / 40
> 50mm - ≤ 125mm metallic		
> 63 - 125mm PE		
> 2" - ≤ 4" PE	≤ 541 / 50	≤ 920 / 85
> 4" - ≤ 6" metallic		
> 100 - ≤ 150mm metallic		
> 125 - ≤ 180mm PE		
> 4" - ≤ 6" PE	≤ 1300 / 120	≤ 1408 / 130
> 6" - ≤ 8" metallic		
> 150 - ≤ 200mm metallic		
> 180mm - ≤ 250mm PE		
> 6" - ≤ 8" PE	≤ 1733 / 160	≤ 1733 / 160
> 8" - ≤ 12" metallic		
> 200 - ≤ 300mm metallic		
> 250mm - ≤ 355mm PE		
> 8" - ≤ 12" PE	≤ 2167 / 200	≤ 2167 / 200
> 12" / 300mm metallic		
> 355mm / > 12" PE		

Third parties submitting new requests onto the SGN Medium-pressure system can use NP/14 table A.1 to identify whether a security of Supply (SOS) or Network Analysis check (NA) is required, depending on the DMP of the system (See NP/14 table A.3), using a combination of the SHQ (*Maximum Demand*) X-Axis and the existing parent main size (*Nominal pipe diameter*) Y-Axis.

If the load/main size combination falls within table A.3, then No Security of Supply or Network Analysis is required and the request can be Fastracked, as outlined in SGN Briefing Note 10.

If the load/main size combination falls outside the table but the load is <1,733kwh then a post-acceptance SOS check is required. If the load falls outside the table and the load is >1,733kwh then Network Analysis is required and a non-Fastrack Request must be submitted.

Standard MP Source pressures are not shown in table A.1 as they are derived from table A.3.

NP/14 section 4.1 states: 'If the request falls outside the scope of Table A.1 or Table A.2 it shall be referred for network analysis i.e. if the load is in excess of the specified values or is to be taken from the IP system or is a non-typical demand or is to be supplied from one of the Independent Undertakings (SIU) it must be referred for network analysis.'

2.2 NP/14 Table A.2 (Low pressure)

Max. Permissible Demand (kW/ scmhl)										
	≤65 / ≤6	≤173 / ≤16	≤433 / ≤40	≤920 / ≤85	≤1733 / ≤160	≤2167 / ≤200	≤3250 / ≤300	≤4333 / ≤400	≤5416 / ≤500	>5416 / >500
≤ 2" / ≤ 50mm metallic	23	23	23	23	23	25	26	26	26	Supply pressure to be agreed by negotiation with the customer (or their representative). The values in the previous column must be used as a start point and the agreed values must allow the efficient development of the overall system.
≤ 63mm / ≤ 2" PE										
> 2" - ≤ 4" metallic	23	23	24	24	24	25	26	26	26	
>50mm - ≤100mm metallic										
> 63 - 125mm PE										
> 2" - 4" PE										
> 4" - ≤ 6" metallic	23	23	24	25	25	25	26	26	26	
>100 - ≤150mm metallic										
>125-≤180mm PE										
>4" - ≤6" PE										
> 6" - ≤ 8" metallic	23	23	24	25	25	25	26	26	26	
> 150 - ≤ 200mm metallic										
> 180mm - ≤250mm PE										
> 6" - ≤8" PE										
> 8" - ≤ 12" metallic	23	23	24	25	25	25	26	26	26	
> 200 - ≤ 300mm metallic										
> 250mm - ≤ 355mm PE										
> 8" - ≤ 12" PE										
> 12" / >300mm metallic	23	23	24	25	25	25	26	26	26	
> 355mm / >12" PE										

Third parties submitting new requests onto the SGN Low-pressure network can use NP/14 table A.2 to identify whether a security of Supply (SOS) or Network Analysis check (NA) is required using a

combination of the SHQ (*Max permissible demand*) X-Axis and the existing parent main size (*Nominal diameter*) Y-Axis. If the two meet a figure inside the grey shaded area in the blue box, then the job will require a Security of Supply check.

If the load/main size combination falls within the blue box and the unshaded white area, then no SOS or NA is required.

In both these cases, subject to the required gas load being used in a 'typical' fashion, the request can be Fastracked, as outlined in SGN Briefing Note 10.

If the load/main size combination falls outside the blue box or outside the table completely (>5416 kwh or >355mm/12" diameter main) then Network Analysis is required and a non-Fastrack Request must be submitted.

The figures in each box represent the pressure in millibar that are offered for a mains extension project for multiple premises, or a iGT-owned CSEP.

Single service connections submitted by UIPs to connect onto the low-pressure network are offered 21mbar as a standard source pressure.

2.3 IP Source Pressures (*Intermediate pressure*)

Section 10.3 outlines Connection Point Pressures for Supplies from the Intermediate Pressure (IP) System:

Single Service connection	2760mb
Network Mains extension	3460mb

Requests for demand from SGN's Intermediate pressure systems cannot utilise the Fastrack process and must always be referred to Network Analysis.

The pressures stated in the above Table should be used by third parties when designing a Single Service or a Mains extension from an SGN IP system.

2.4 NP/14 Table A.3 (*Medium pressure tiers*)

Tier (DMP) \ Pressure	Maximum Operating Pressure (MOP)	Min. Parent Main Supply Pressure	Design Minimum Mains Pressure	Max Service Pressure Drop
MP = 280mb	2000mb	450mb	350mb	70mb
MP = 180mb	1600mb	350mb	250mb	70mb
MP = 105mb	1100mb	240mb	140mb	35mb
MP = 65mb	250mb	150mb	100mb	35mb
MP = 35mb	185mb	95mb	70mb	35mb

NP/14 table A.3 is used to identify the design parameters based on Maximum Operating Pressure (MOP) of a Medium-pressure Network system.

The SGN Medium-pressure Network system is separated into five tiers, designated by the Design Minimum Pressure (*DMP*) which is calculated by the Design Minimum Mains Pressure minus the Max Service Pressure Drop.

The second column is the Maximum Operating Pressure (*MOP*) of the system, working on a less than or equals basis.

The third column is the Minimum Parent Main Supply Pressure which is the standard pressure that SGN will offer for a '*mains extension*' project for multiple premises, or a CSEP.

The fourth column is the Design Minimum Mains Pressure, which is the standard pressure that SGN will offer for a '*single service*' installation directly connecting to SGN's existing network or at the point of connection onto a UIP-installed main.

The fifth column outlines the maximum pressure drop permissible through a new medium pressure service, for the relevant MP Pressure tier. SGN are obligated under our transportation licence to ensure design minimum pressures are met all times, so will only adopt UIP installed pipework sized accordingly to ensure minimum mains and service extremity pressures are met.

SGN publish a '*DMP Checker*' Access database which is used to identify the MOP of Medium Pressure systems, without the need for Network Analysis by submission of an FM176. The SGN DMP Checker is available to all third parties who hold a Final Connections Agreement with SGN or those of solely hold 'Design' accreditation under GIRS.

Please find the DMP Checker as part of the Third Party Connections Zip file from www.sgn.co.uk

2.4 NP/14 Table A.4

Max. Permissible Demand (kW) / (scmh)	LP: Diameter (mm)	MP: DMP =65mb Diameter (mm)	MP: DMP =105mb Diameter (mm)	MP: DMP >105mb Diameter (mm)
<=325 / <=30	63	63	63	63
<=758 / <=70	90	63	63	63
<=1083 / <=100	90	63	63	63
<=1733 / <=160	125	90	63	63
<=2167 / <=200	125	90	90	90
<=3250 / <=300	125	90	90	90
<=4333 / <=400	180	125	90	90
<=5416 / <=500	180	125	90	90
<=10833 / <=1000	180	125	125	125
>10833 / >1000	By Negotiation			

NP/14 table A.4 provides guidance on standard connection diameter minimums for mains extensions.

The table values are the minimum that will be accepted for a UIP design which SGN are to adopt. UIP mains extension designs will be rejected if the above table is not adhered to.

iGTs should use NP/14 table A.4 as a guideline for minimum offtake sizes for CSEP sites, but they are not mandatory for iGT adopted sites.

Using a combination of the SHQ (Max permissible demand) X-Axis and the pressure regime Y-Axis, minimum pipe diameters are given.

Note - Medium-pressure systems are grouped into three tiers in this instance, not the traditional five as per NP/14 table A.3.

2.5 NP/14 Table A.5

PID \ Allowable Length	≤ 10m	≤ 15m	≤ 23m	≤ 30m	≤ 50m	≤ 63m
	≤ 32.5kW	32mm	32mm	32mm	32mm	32mm
≤ 65kW (U6)	32mm	32mm	32mm	32mm	63mm	63mm
≤ 173kW (U16)	63mm	63mm	63mm	63mm	63mm	63mm
≤ 275kW (U25)	63mm	63mm	63mm	63mm	63mm	63mm
≤ 433kW (U40)	63mm	63mm	63mm	90mm	90mm	90mm
≤ 693kW (U65)	90mm	90mm	90mm	90mm	90mm	90mm
≤ 1083kW (U100)	90mm	90mm	90mm	90mm	125mm	125mm

NP/14 table A.5 shows standard design parameters for new Low-pressure service installations.

Minimum pipe diameters can be identified by using a combination of the SHQ (permissible instantaneous demand) X-Axis and the allowable length Y-Axis.

New Low-pressure, SGN-adoptable service extensions are rejected if the criteria in table A.5 is not adhered to.

If the scope of a new Low-pressure, SGN-adoptable service design falls outside table A.5, a bespoke solution must be designed by the UIP using any industry standard design tool to warrant and prove that minimum mains and service extremity pressures and velocities haven't been exceeded.

2.6 NP/14 Table A.6

PID (kWh) \ Length (m)	≤ 7m	≤ 15m
	≤ 32.5kW	¾"ST
≤ 65kW (U6)	¾"ST	1"ST

NP/14 table A.6 shows minimum pipe size to be used when designing above ground services (lateral) to be connected to an above ground Riser. As standard, SGN will not adopt above ground plastic pipework (*unless pre-agreed and policy-approved 'PE Risers'*) therefore the given diameters are in inches as the pipework should be Steel (ST), whereas plastic (PE) diameters are in millimetres, for new lay PE.

Using a combination of the SHQ (permissible instantaneous demand) X-Axis and the allowable length Y-Axis, minimum pipe diameters are given.

UIP service extensions are rejected if the above table is not adhered to.

If the scope of a new Low-pressure, SGN-adoptable service design falls outside table A.6, a bespoke solution must be designed by the UIP using any industry standard design tool to warrant and prove that minimum mains and service extremity pressures and velocities haven't been exceeded.

2.7 NP/14 Table A.7

PID (kW / scmh)	Length (m)
	$\leq 63\text{m}$
$\leq 173 / \leq 16$	32mm
$\leq 1083 / \leq 100$	63mm

NP/14 table A.7 shows standard design parameters for new Medium-pressure service installations.

Minimum pipe diameters can be identified by using a combination of the SHQ (*permissible instantaneous demand*) X-Axis and the allowable length Y-Axis.

New Medium-pressure, SGN-adoptable service extensions are rejected if the table A.7 is not adhered to.

If the scope of a new Medium-pressure, SGN-adoptable service design falls outside table A.6, a bespoke solution must be designed by the UIP using any industry standard design tool to warrant and prove that minimum mains and service extremity pressures and velocities haven't been exceeded.

2.8 NP/14 Table A.8

Maximum pressure drop PID	$\leq 3\text{mb}$			$\leq 4\text{mb}$			$\leq 5\text{mb}$		
	Length (m) $\leq 10\text{m}$	$\leq 25\text{m}$	$\leq 50\text{m}$	$\leq 10\text{m}$	$\leq 25\text{m}$	$\leq 50\text{m}$	$\leq 10\text{m}$	$\leq 25\text{m}$	$\leq 50\text{m}$
$\leq 32.5\text{kW}$	20mm	25mm	25mm	20mm	25mm	25mm	20mm	25mm	25mm
$\leq 65\text{kW (U6)}$	25mm	32mm	32mm	25mm	32mm	32mm	25mm	32mm	32mm
$\leq 173\text{kW (U16)}$	63mm	63mm	63mm	63mm	63mm	63mm	63mm	63mm	63mm
$\leq 433\text{kW (U40)}$	63mm	63mm	63mm	63mm	63mm	63mm	63mm	63mm	63mm
$\leq 693\text{kW (U65)}$	63mm	90mm	90mm	63mm	63mm	90mm	63mm	63mm	90mm
$\leq 1083\text{kW (U100)}$	90mm	90mm	90mm	90mm	90mm	90mm	90mm	90mm	90mm

NP/14 table A.8 shows the maximum length of pipe to be retained where a large pressure drop is to be utilised on a Low-pressure network.

NP/14 section 4.2.2 states that subject to an increase in demand, existing services are permitted a maximum pressure drop of up to 5mb, where sufficient mains pressure is available.

Using a combination of the SHQ (*permissible instantaneous demand*) X-Axis and the allowable length Y-Axis, minimum pipe diameters are given, staggered over three incremental pressure drop increases from 3 up to 5mb.

2.9 NP/14 Tables A.9 and A.10

NP/14 table A.9

Parent Connection	63mm	90mm	125mm	180mm	250mm	315mm	>315mm	
63mm	63mm top outlet 'service' tee (*) – a high volume tee should be used to connect along the length of a pipe & a coupler used to connect to the end of a pipe for continuations							
90mm	63 x 63mm Cut out Tee & Reducers	Cut out tee	Branch Saddle Connection					
125mm		90 x 90 Cut out Tee & reducer(s)	Cut out tee	Branch Saddle Connection				
180mm			125 x 125 Cut out Tee & reducer(s)	Cut out tee	Branch Saddle Connection			
250mm		180 x 180 Cut out Tee & reducer(s)		Cut out tee	Branch Saddle Connection			
315mm				250 x 250 Cut out Tee & reducer(s)	Cut out tee	Branch Saddle Connection	Cut out tee	Cut out equal tee
>315mm		315 x 315 Cut out Tee & reducer	Cut out tee		Cut out tee			

NP/14 table A.10

Parent Connection	2"	3"	4"	6"	8"	10"	>10"	
<=63mm / <=2"	Encirclement tee/drilling saddle			63mm or 2" Metallic Top Tee				
<=90mm / <=3"	2" x 2" Encirclement tee & reducer(s)	Encirclement Tee & reducer(s)						
<=125mm / <=4"		3" x 3" Encirclement tee & reducer(s)	Encirclement Tee & reducer(s)					
<=180mm / <=6"			4" x 4" Encirclement tee & reducer(s)	Encirclement Tee & reducer(s)				
<=250mm / <=8"		6" x 6" Encirclement tee & reducer(s)		Encirclement Tee & reducer(s)			8" x 8"	Encirclement Tee & reducer(s)
<=315mm / <=10"				Encirclement tee & reducer(s)	10" x 10" Encirclement tee & reducer(s)	Encirclement Tee & reducer(s)		
>315mm / >10"		Encirclement Tee & reducer(s)	Encirclement Tee & reducer(s)	Encirclement Tee & reducer(s)	Encirclement Tee & reducer(s)	Encirclement Tee & reducer(s)	Encirclement Tee & reducer(s)	

NP/14 tables A.9 and A.10 show the standard connection types for the combination of existing parent mains in the Y Axis and the third party offtakes.

Third parties must refer to tables A.9 and A.10 to identify standard, SGN policy-approved fittings that SGN will accept for CSEP sites and network extensions for SGN adoption.

When falling outside the remit of tables A.9 and A.10, bespoke connections should be used, but must conform to applicable SGN Policy (PL/2) and British Standards, with applicable Kitemark Certification, where applicable. Where non-standard diameter parent mains are to be utilised for a connection point, the equivalent PE or Metallic should be used, using a notion of less than or equal to.

3 NP/14 Appendix B

3.1 NP/14 Table B.1

Description / Pressure tier	Description	Maximum design pressure drop
LP (DMP <=19mb)	New	2mb or <=5mb ^{1,2}
	Non-Insertion replacement	2mb or <=5mb ^{1,2}
	Insertion replacement	<=5mb ³
MP (DMP <=105mb)	All	35mb
MP (DMP >105mb)	All	70mb
IP	All	20% of available pressure drop (capped minimum of 140mb)

NP/14 table B.1 outlines maximum permissible pressure drops through services, whether new lay or existing – Where permissible, a greater than 2mb pressure drop is available for Low Pressure Services, if adequate parent main pressure is available and if the nominal internal diameter of a service is $\geq 150\text{mm}$ (*External diameter = 180mm*).

3.2 NP/14 Table B.2

Max design Demand/length	<10m	<15m	<23m	<30m	<50m
<65kwh	32mm/ 1"ST	32mm/ 1"ST	32mm/ 1"ST	32mm/ 1"ST	40mm/ 1 ¼"ST
<95kwh	32mm/ 1"ST	32mm/ 1"ST	32mm/ 1"ST	40mm/ 1 ¼"ST	40mm/ 1 ¼"ST
<135kwh	32mm/ 1"ST	40mm/ 1 ¼"ST	40mm/ 1 ¼"ST	40mm/ 1 ¼"ST	40mm/ 1 ¼"ST
<195kWh	40mm/ 1 ¼"ST	40mm/ 1 ¼"ST	63mm/ 1 ¼"ST	63mm/ 1 ½"ST	63mm/ 1 ½"ST
<273kWh	63mm/ 1 ¼"ST	63mm/ 1 ½"ST	63mm/ 1 ½"ST	63mm/ 2"ST	63mm/ 2"ST
<400kWh	63mm/ 1 ½"ST	63mm/ 2"ST	63mm/ 2"ST	63mm/ 2"ST	63mm/ 2"ST
<450kWh	63mm/ 2"ST	63mm/ 2"ST	63mm/ 2"ST	63mm/ 2"ST	>63mm/ >2"ST
$\geq 450\text{kWh}$	Bespoke Design				

NP/14 table B.2 shows minimum pipe size to be used when designing above ground Low-pressure Risers.

NP/14 table B.2 should be used for the design of above ground, Low-pressure manifolds and single column above ground Low-pressure risers, when used in conjunction with NP/14 Table A.6, for standard design above ground, Low-pressure services (*laterals*).

Using a combination of the SHQ (*permissible instantaneous demand*) X-Axis and the allowable length Y-Axis, minimum pipe diameters are given.

UIP Riser designs will be rejected if the above table is not adhered to.

If the scope of a new Low-pressure, SGN-adoptable Riser design falls outside table B.2 a bespoke solution must be designed by the UIP using any industry standard design tool to warrant and prove that minimum mains and service extremity pressures and velocities haven't been exceeded.

4 NP/14 Appendix C

4.1 NP/14 Table C.1

To identify the proposed profile of gas use, it is necessary to understand the time(s) of day and year at which the gas demand is required and if the demand varies from this level at the other key times/conditions of the day and year.				
Please complete the following boxes as is appropriate for the demand.				
Period	Please indicate with a tick the times of the day and year when demand usage may occur			
	0600-1000	1000-1600	1600-2000	2000-0600
Beginning October – end March (Winter)				
Beginning June – end August (Summer)				
Other periods of the year				

NP/14 Table C.1 should be used to outline the time of day and year gas demand will be used, where falling outside the remit of 'typical' usage.

NP/14 Section 4.4 defines a 'Non typical demand' as the following:

'A non-typical demand is a demand with a non-typical seasonal and/or daily profile for the customer type. Customers using compressors or boosters fall into this category.'

See SGN Briefing Note 17 (*Load classification*) for further info.

4.2 NP/14 Table C.2

Peak Instantaneous Demand to be compressed and the pressure required:kW/m ³ /hr	mbar/bar	
Compressor Types (Reciprocating/Fan/Screw/Booster/Other)			
Number of Compressors/Boosters and the Peak Instantaneous Demand to each excluding standby:	No.:		Flow:	Plant 1kW/m ³ /hr Plant 2..... kW/m ³ /hr Plant 3.....kW/m ³ /hr
Time taken to achieve full load from start up	Time taken seconds			
Profile provided for non linear start up profile	Y/N/NA			
Number of burners to be installed?				
Will burners be operated in parallel?	Y/N/NA			
Typical burner stages	Startup / Pre-	Pilot fire	Low fire	High fire
Flow as % of burner's PID – burner 1				
Minimum time for each stage (s) – burner 1				
Flow as % of burner's PID – burner 2				
Minimum time for each stage (s) – burner 2				
Flow as % of burner's PID – burner 3				
Minimum time for each stage (s) – burner 3				

NP/14 table C.2 should be used to provide details of a Compressor/Booster that is to be installed on SGN-adoptable infrastructure.

Where a Compressor/Booster is to be used on an iGT site, downstream of a CSEP, the iGT should undertake relevant Booster Analysis to confirm both upstream and downstream conditions of a CSEP are stable and will leave existing network integrity unaffected. Analysis results should be passed to Third Party Connections accordingly, upon request submission.

Note - on mixed or multi-commercial developments, only part of the total load may be boosted, for example a CHP unit, therefore the 'Peak Instantaneous Demand to be compressed and the pressure required' should relate only to gas that is being boosted.

4.3 NP/14 Table C.3

Source Settings	Standard Conditions	Scale for Demand Types		
		Domestic	Commercial	Industrial
Winter Day	Peak Hour, Peak Day Pressure	100%	100%	100%
Winter Night	Minimum Hour, Peak Day Pressure	40%	40%	100%
Summer Day	Peak Hour, Minimum Day Pressure	20%	20%	100%
Summer Night	Minimum Hour, Minimum Day Pressure	10%	10%	100%

NP/14 table C.3 outlines settings for which SGN will undertake ‘*Seasonal*’ analysis for new loads deemed ‘*non-typical*’ as per a third party provided NP/14 table C.1.

The four ‘*source*’ settings relate to the pressures offered on an iGT Quotation, where non-typical gas usage has been identified.